AUGUST • 1959

FIREMEN

VOLUME 26, NUMBER 8, COPYRIGHT 1959 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

Typical Lumber Yard Fire — *see page 44*

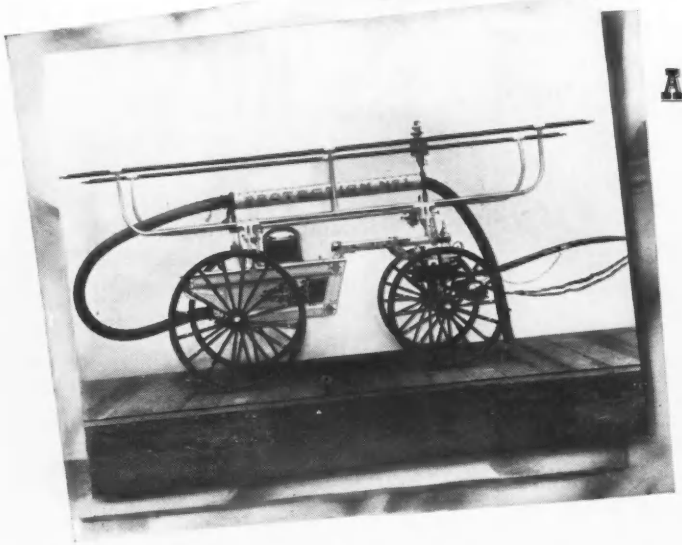
ONAL FIRE
TECTION
OCIATION

64th
year

FIRE CHIEFS' CONVENTION ISSUE!

43,000 Circulation!

The 125th Anniversary of

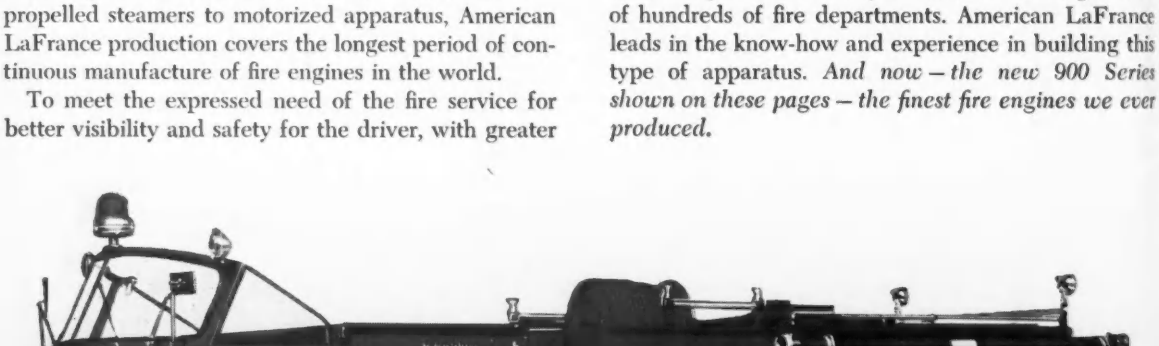


American LaFrance "Hand Tub" of type built 1834–1905

We are celebrating our 125th Anniversary this year. Both the fire service and American LaFrance have come a long way since 1834. American LaFrance had its beginning that year when the Button Fire Engine Works was established. Hand drawn, hand operated pumpers were produced for several years before steamers were built in America.

American LaFrance has progressively developed with the fire service needs. From hand pumpers, steamers, horse drawn aerial ladder trucks, and self-propelled steamers to motorized apparatus, American LaFrance production covers the longest period of continuous manufacture of fire engines in the world.

To meet the expressed need of the fire service for better visibility and safety for the driver, with greater maneuverability, American LaFrance introduced the cab-ahead-of-engine design in 1947. That the fire service was right is attested by the records and experience of hundreds of fire departments. American LaFrance leads in the know-how and experience in building this type of apparatus. *And now – the new 900 Series shown on these pages – the finest fire engines we ever produced.*



Model INVADER, 750 g.p.m. Class A, semi-cab.

# of AMERICAN LAFRANCE

Model INVADER, 750 g.p.m. Class A, canopy cab.

900 Series Custom Pumpers set new standards of excellence

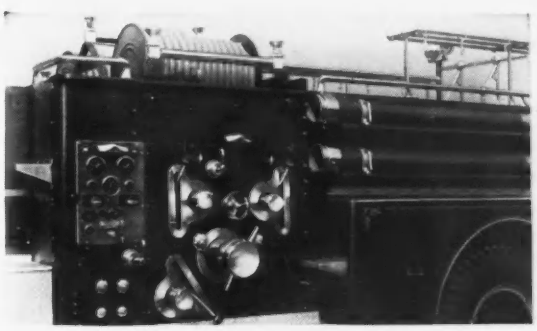
American LaFrance leadership is outstanding in the new 900 Series custom built fire engines. The same basic features of construction are incorporated in all custom built pumpers. The exterior appearance varies only with trim and specified equipment to meet your operating needs.

There are over 15 Extra Value features provided standard only by American LaFrance. These Extra Values provide longer service life with less maintenance, better operation and greater dependability.

These Extra Value features are:

- Wider cab
- Heavier frame
- Shock absorbers, front, rear
- Dual fuel system
- Rubber suspension of cab
- Wrap-around spring eyes
- Twinflow pump
- Hardened stainless impeller shaft
- Single pump packing
- Pump transmission cooling
- Static and dynamic balanced impellers
- Full 2½" water flow gates
- Chrome plated gate ball
- Ventilated disc wheels
- Booster by-pass cooling
- Lacquer finish

For the best value in fire engines, specify American LaFrance. More and more fire departments are doing it! Write for complete brochure of detail construction.



Pump controls grouped for accessibility. All pump operating gages, engine throttle, pump primer control, and pump pressure governor control are mounted on a removable panel, indirectly lighted for night operation. All discharge gate controls, transfer valve, water tank valve, bleeder valves, auxiliary cooler, radiator fill and booster cooling line valve are located for operator's convenience.

AMERICAN LAFRANCE

A DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N.Y., U.S.A.

LaFrance Export Corporation
Elmira, N. Y.

LaFrance Fire Engine and Foamite Limited
Toronto 9, Ontario, Canada

What fire fighters are reading . . .

Here are the most popular books and pamphlets now being ordered by fire fighters from the NFPA. If you want some for your fire station library or for yourself, you can order by checking appropriate boxes, filling out the blank below and mailing this page to the NFPA Publications Department.

☐ **Inspection Manual** (Second Edition)
A completely revised, new edition of this popular manual for fire department inspectors. Covers inspection procedure, what to look for in various occupancies, heating hazards, protective equipment, how to make plans and reports, and many other important topics.
Cloth bound, 320 pages, illustrated **$4.00 per copy**

☐ **Respiratory Hazards of the Fire Service**
In this book Dr. William D. Claudy describes respiratory hazards that confront fire fighters. Well-illustrated, about one-third of the book is devoted to the construction, use and maintenance of canister and self-contained masks. Other sections deal with smoke inhalation, lack of oxygen, toxic gases, fire fighting procedures and numerous other facts important to a fire fighter's well-being.
Cloth bound, 5¾ x 8⅝ inches, 140 pages, illustrated **$4.25 per copy**

☐ **Attacking and Extinguishing Interior Fires**
Gives sound theories on using water fog for fire fighting. Covers behavior of interior fires, equipment to use and indirect method of attack.
Cloth bound, 134 pages, illustrated **$3.75 per copy**

☐ **Fire Fighting Tactics**
An excellent supplement to "Attacking and Extinguishing Interior Fires." Has case histories of successful fire attack with water fog, and suggests operational planning procedures and tactics. A "must" reading for the fire officer on the way up!
Cloth bound, 134 pages, illustrated **$3.75 per copy**

☐ **Fire Protection for Chemicals**
Practical summary of things fire fighters should know when dangerous chemicals are involved or threatened by fire. Detailed attention given to fire fighting procedures for the many chemicals listed in this volume.
Cloth bound, 152 pages **$3.00 per copy**

☐ **Handling Hose and Ladders**
A pictorial book showing recommended procedures for handling hose and ladders on the fireground. Simple step-by-step sequences provide a good training aid for fire department instructors.
Cloth bound, 190 pages, illustrated **$2.50 per copy**

NFPA Publications Department
60 Batterymarch Street
Boston 10, Massachusetts

Please send me the items checked on this page.

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Address.....

City (Zone)..... **County**.....

State.....

☐ **Check for $**.....**enclosed.** ☐ **Please send bill.**

☐ **Industrial Fire Brigades Training Manual**
A popular book for plant personnel and fire chiefs who train industrial fire brigades. Has thorough explanation of fire fighting techniques and instruction for hose and ladder evolutions, ventilation and fire company operations.
Paper bound, 160 pages, illustrated **$3.25 per copy**

☐ **Firemen's Responsibility in Arson Detection**
Gives tips on what a fireman should know about finding, protecting and reporting evidence of arson. Good sections on preserving evidence and testifying in court. Approved by NFPA Fire Marshals' Section.
Paper bound, 28 pages **50 cents per copy**

☐ **Firemen's Training Centers**
Suggestions on planning and building training facilities for fire fighters. Has description of some of the best and modern training schools in the United States.
Paper bound, 20 pages, illustrated **$1.00 per copy**

NFPA STANDARDS FOR FIRE DEPARTMENTS

☐ **Specifications for Motor Fire Apparatus**
This important NFPA Standard No. 19 details specifications and performance standards which fire chiefs should know when they buy pumpers, tank trucks and aerial ladders. Also explains acceptance test procedures and has a useful specification form for requesting bids.
Paper bound, 64 pages **60 cents per copy**

☐ **Volunteer Fire Departments for Rural and Small Communities**
This NFPA Standard No. 192 was prepared especially for smaller volunteer fire departments. It suggests equipment, organization, methods of operation and model ordinances and rules. Also has specifications for motor fire apparatus.
Paper bound, 68 pages **$1.00 per copy**

☐ **Fire Department Ladders, Ground and Aerial**
Here are some new recommendations on the use, maintenance and testing of ground and aerial ladders for the fire service in No. 193. Also new information on proper ladder loading, methods of testing and test materials available to every fire department.
Paper bound, 20 pages **50 cents per copy**

☐ **Fire Hose Coupling Screw Threads**
This NFPA Standard No. 194 specifies the characteristics and dimensions of National Standard fire hose coupling screw threads. It will be very useful to fire departments now planning or in the process of converting hose coupling threads to the recommended National Standard thread.
Paper bound, 12 pages **35 cents per copy**

☐ **Care of Fire Hose**
Recommendations for the care, maintenance and use of cotton rubber lined and unlined fire hose and suction hose are in this Standard No. 198. Also has suggestions on washing, drying and storage of hose, use of nozzles, couplings and gaskets, mildew treatment, and hose records.
Paper bound, 44 pages **50 cents per copy**

AIRCRAFT RESCUE AND FIRE FIGHTING

What fire departments should know about handling aircraft fires.

☐ **NFPA Standard No. 402**
"Standard Operating Procedures, Aircraft Rescue and Fire Fighting."
Paper bound, 24 pages **35 cents per copy**

☐ **NFPA Standard No. 403**
"Suggested Aircraft Rescue and Fire Fighting Equipment for Airports."
Paper bound, 36 pages **$1.00 per copy**

☐ **NFPA Standard No. 406**
"Aircraft Rescue and Fire Fighting Techniques for Municipal and Rural Fire Departments."
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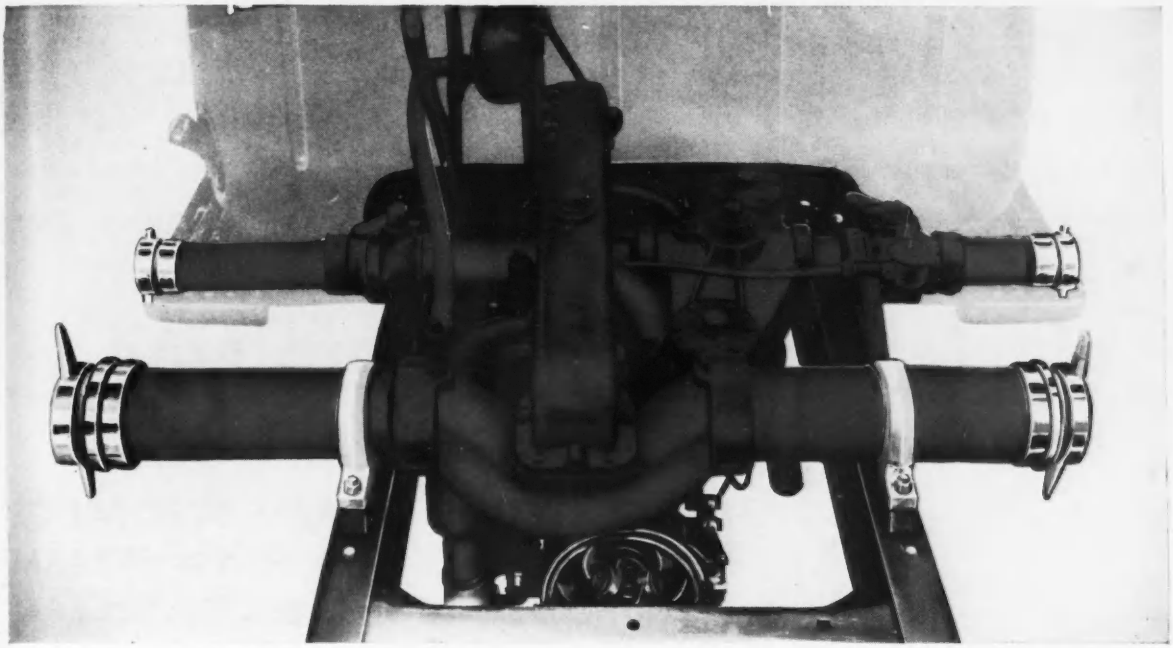

GET 3 BIG ADVANTAGES

WITH THE VERSATILE BARTON-AMERICAN DUPLEX-MULTISTAGE CENTRIFUGAL PUMP

You'll get faster control- and higher performance—with a Barton-American Type DMA Pump. These three outstanding design features explain why -and *only* the DMA has them all!

1. In *one* compact pump unit, you have a choice of three pressure and volume selections: High volume at normal pressures, normal high pressures, and extremely high pressures for fog guns. All operate at moderate engine speeds . . . and by merely shifting a *single* lever.

2. Two impellers, *independently* shafted and geared, will operate alone or together in series. Volume pump handles dirty water *without* damage to the high pressure pump.

3. This Barton-American Duplex multistage centrifugal pump has one-point lubrication similar to truck transmission housings. All bearings are bathed in oil inside . . . there's no need for water lubrication.

Yes, these unique, advanced features, plus automatic pressure-operated valves and other advantages provide you with *outstanding* fire-fighting power. For full details, write for . . .

Typical pump panel. One lever gives you instant selection of *Capacity-Pressure-Series* operation—a Duplex Pump feature.

BULLETIN 8733
DMA Duplex Multistage Centrifugal Midship Pumps

BULLETIN 8734
DMB Duplex Four-Stage Midship Pumps

★ AMERICAN ★
FIRE PUMP COMPANY

P. O. BOX 219-B BATTLE CREEK, MICHIGAN

Glenn L. Martin Airport

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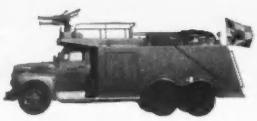

McDonnell Aircraft

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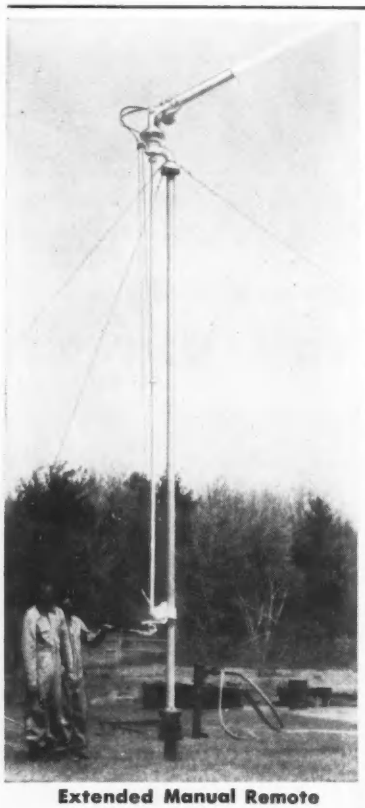
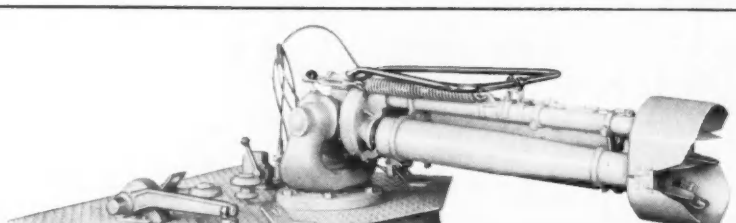
Most Complete Line of Sp

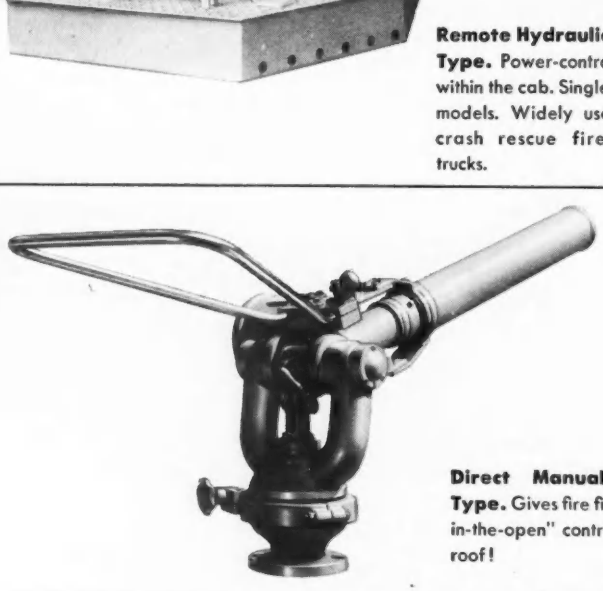


Extended Manual Remote Control Type. Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units... greater remote extensions for special applications.

ALL ROCKWOOD TURRETS DISCHARGE
FogFOAM • SOLID FOAM STREAM
WaterFOG • SOLID WATER STREAM



Remote Hydraulic Control Type. Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Direct Manual Control Type. Gives fire fighters "out-in-the-open" control from cab roof!

Washington, D. C. National Airport

U. S. Air Force Type 0-12

Theodore Francis Greene Airport

Douglas Aircraft Co.

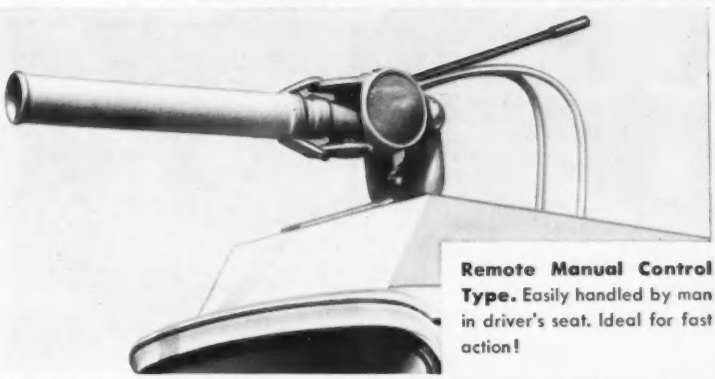
Socony Mobil Refinery, Augusta, Kan. | Fairchild Aircraft Corp. | Cuba, N. Y. Fire Department | Royal Canadian Navy | Dayton, Ohio, Airport

Specialty Turrets on the Market!

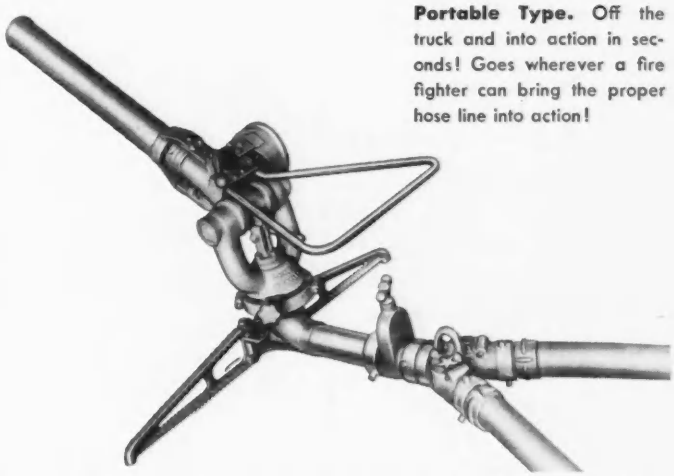
On the truck or on the ground, fire fighters can hit fires *harder* using Rockwood Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

The reason is simple. Rockwood Turrets provide plenty of both volume *and* versatility. They're designed to fight fires four ways: With FogFOAM . . . Solid FOAM Stream . . . WaterFOG . . . Solid Water Stream. What's more, all are easily adjustable on the fire line to meet changing fire conditions.

Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, Rockwood Turrets are designed to give fire fighters an extra edge of efficiency on *most* types of fires. Make sure your department has the best tools to work with. Get full details on the complete line of fire-fighting products. Mail coupon now.



Remote Manual Control Type. Easily handled by man in driver's seat. Ideal for fast action!



Portable Type. Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

ROCKWOOD SPRINKLER COMPANY

Engineers Water... to Cut Fire Losses

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A Division of the Gamewell Company
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Please send me your illustrated booklet on Rockwood Fire-Fighting Products

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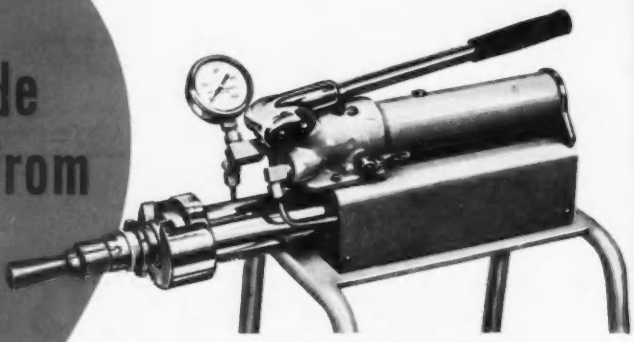
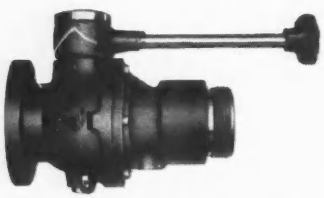
A matter of pride in every product from ELKHART BRASS



No. 422 HAN-DRAULIC EXPANDER

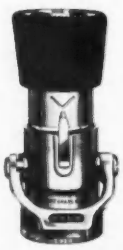
Attaches expansion ring coupling by hydraulic pressure. Has individual size segments. Quick change.



No. BT96 2½" APPARATUS VALVE

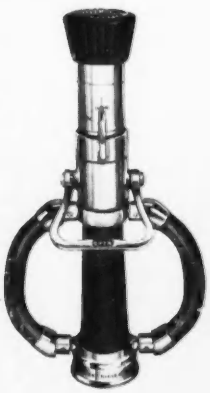
Has adjustment feature on outlet side of valve. New twist-to-lock quarter turn handle. Holds vacuum or pressure. Full waterway.

Whether it's a valve, a spanner, an extinguisher, a Mystery nozzle, coupling or any one of more than 3000 items produced by Elkhart—our stamp of pride and your proof of quality is the famous Heart and Elk trade mark—made by Elkhart Brass.



SELECT-O-STREAM MYSTERY NOZZLES

In 1", 1½", 2½" sizes. Select stream by sight or touch. Locks to stream you choose. Shuts off in any position. From straight stream through 30° to 90° fog pattern.



No. B-800 SOS

New! Improved! Exclusive Dial-A-Tip feature gives a variable straight stream equivalent to straight tips from ⅞" to 1⅛". Has 30°, 60°, 90° fog positions.

No. 287 DELUGE NOZZLES

Portable. Easy to carry. Also recommended for use with Elkhart J or JN 200 for master fog streams.

No. X-329 X-TRUDE COUPLING

For 1½" and 2½" single or double jacket fire hose. Non-corrosive, forged brass coupling approximately one-half the weight but considerably stronger than a cast coupling.

SEE OUR NEW CONSTANT FLOW MYSTERY NOZZLE WITH SELECT-O-FLOW ADJUSTMENT FROM 60-125 g.p.m. AT THE CONVENTION

ELKHART BRASS MFG. CO., INC.
ELKHART, INDIANA
More than half a century of fire fighting progress

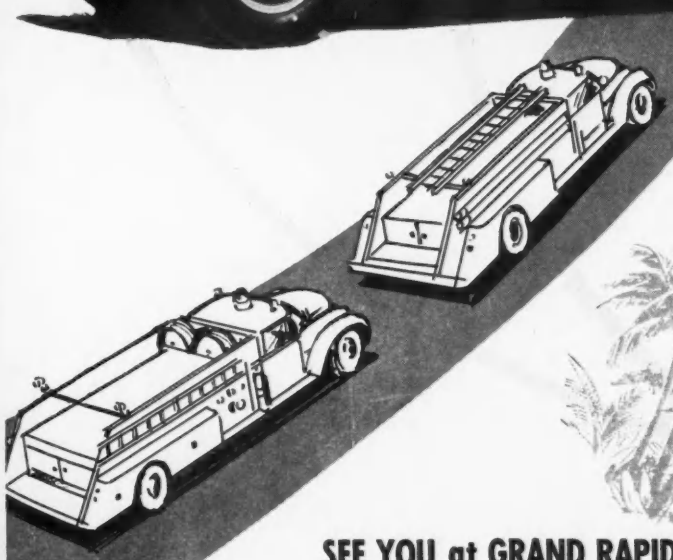
DARLEY

Champions

from the SOUTH* to the NORTH POLE**

*PUNTA ARENAS, CHILE
**NOME, ALASKA

Darley Champion Fire Apparatus is job engineered to your local requirements.



SEE YOU at GRAND RAPIDS!

W. S. DARLEY & CO.

2810 WASHINGTON BOULEVARD • CHICAGO 12, ILLINOIS

Conventional or cab-forward..

Mack B-model, 1250-gpm semi-cab, triple-combination pumper

Mack B-model, 6-wheel, 100' Mack-Magirus aerial

Mack C-model, 1250-gpm semi-cab pumper

Mack C-model, 1000-gpm canopy-cab, triple-combination pump

..they're all

"Built Like a Mack"

When you select Mack fire apparatus you know you will get the characteristics and performance you want and have a right to expect. Mack will deliver the unit that exactly meets YOUR needs: cab-forward or conventional models . . . brakes, rear axle ratios, transmissions—standard or automatic—and chassis design for your own particular needs . . . built with famous Mack components to meet your most exacting requirements.

Mack fire apparatus is built to the highest standards in the industry. For sheer dependability, nothing can touch it. For sustained performance with only routine attention, nothing can match it. You can always depend on a Mack. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

7141

MACK

FIRST NAME FOR

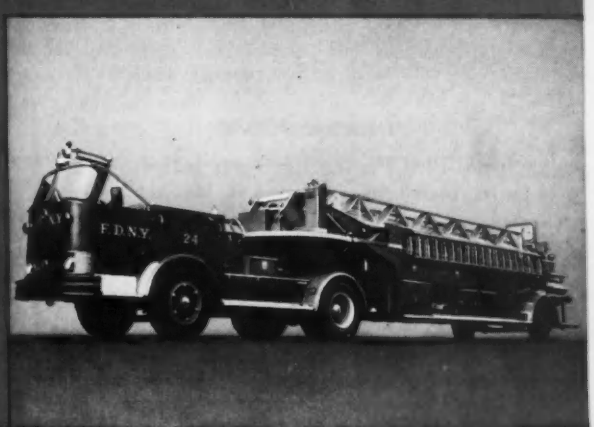
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM • SQUAD AND HOSE WAGONS • AERIALS 65' to 144' • COMBINATION LADDER TRUCKS

Mack B-model, 4-wheel aerial, 65'-100'

Mack B-model, 500-gpm coupe cab pumper

Mack C-model, 750-gpm canopy-cab pumper



Mack C-model, 6-wheel tractor aerial, 100'

ANNOUNCING . . .

"LP-GAS FIRE CONTROL!"

A new, full color motion picture film for the fire service. 16mm, color with sound, running time 10 minutes.

On-the-spot coverage of how Chief George W. Requa's Fire Department in Arcade, California, handled a difficult fire control problem with thorough pre-planning.

Scene from "LP-Gas Fire Control!"

Featuring —

- A violent fire involving truck-trailer combination carrying 8,000 gallons of liquefied petroleum gas,
- Fire department's method of pre-planning for just such an incident,
- Actual fire attack and control, operation of relief valves, and protection of exposures.

This is a spectacular motion picture film. It is an on-the-scene, graphic report of how a fire department did an outstanding fire fighting job. It should be of great importance to the fire service, particularly for training sessions on how to handle LP-Gas fires.

Here's what it shows: A fire department, knowing that LP-Gas tank trucks came into the community, did some pre-planning for gas fire emergencies. Then one night, came the emergency! Fire involved a truck-trailer combination carrying 8,000 gallons of liquefied petroleum gas!

What the department did, how its tactics worked out and other important elements of fire ground action are all recorded on this film. A spectacular sequence shows how relief valves function and how hose streams were used to get control of a tough situation.

This film should be very helpful for fire fighters training for LP-Gas fires. It has excellent color, good narration and a fine, informative sequence of action that shows what to expect in this type of fire. The NFPA is distributing this film primarily for fire schools, fire service associations and industry. It is available on a purchase basis and can be shown with good effect year after year in training programs.

Available for State and County training schools, fire departments, industry and others interested.

Purchase price

$75.00 per print

ORDER FORM FF-8

National Fire Protection Association
60 Batterymarch Street, Boston 10, Massachusetts

Please send me.....print(s) of the film "LP-Gas Fire Control!"

Name.....

Street.....

Municipality..... **Zone No.**.....

County..... **State**.....

☐ Check is enclosed. ☐ Please send bill.

FIREMEN

A monthly magazine published for the fire service members of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

Volume 26 • Number 8

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With this issue of FIREMEN magazine, we pay tribute to the 86th Conference of the International Association of Fire Chiefs, to the fire service in the state of Michigan and to fire departments everywhere. It is being circulated to every fire department in the United States to encourage paid, call and volunteer fire departments to join the National Fire Protection Association.

FIREMEN magazine can only be obtained through membership in NFPA but any municipal, paid, call or volunteer fire department can join the Association. Membership dues are only $15.00 per year which brings subscriptions to this magazine, to the NFPA *Quarterly* and to the monthly *Fire News*. A page in the middle of this issue explains the membership plan for fire departments.

As a sampling of the authoritative information available from the NFPA Executive Office we asked various members of the NFPA staff to contribute special articles for this issue. These articles are timely and important to fire fighters everywhere and we urge our readers to study them carefully and try to put some of the recommendations into practice. If you have questions or want more detailed information, write to the particular author.

We are especially proud of this month's cover picture and the illustrations in the article, "Lumber Yard Fires" in the middle of the magazine. Rarely do weather and fire conditions allow the opportunity for such clear photography of fire ground action. The excellent full color reproduction of these pictures in the magazine is a tribute to the skill of Fidelity Press and Old South Engraving Corporation, the printing and engraving establishments which have served FIREMEN magazine for many years. (*Photos by Warren Y. Kimball.*)

●

Many fire departments have almost completed their preparations for Fire Prevention Week, October 4–10. Requests are already pouring in to the NFPA Executive Office for the variety of colorful posters, folders, inspection blanks, television films and other items prepared specifically for Fire Prevention Week by the Association. Order blanks for these items were included in last month's issue of FIREMEN magazine and in *Fire News*. Fire departments who do not have membership in NFPA and who have not learned what items are available can get a complete list of the materials simply by writing to the NFPA Publications Department. However, actual orders for the Fire Prevention Week materials must reach the NFPA Executive Office no later than September 22. Delivery of the materials in time for Fire Prevention Week cannot be guaranteed after that date.

●

The Fall Conference of NFPA will be held in Des Moines, Iowa, November 11–13. Headquarters will be the Hotel Fort Des Moines and a cordial invitation is extended to members of fire departments and industry to attend this conference. The program details will be published in forthcoming issues of FIREMEN magazine and *Fire News*.

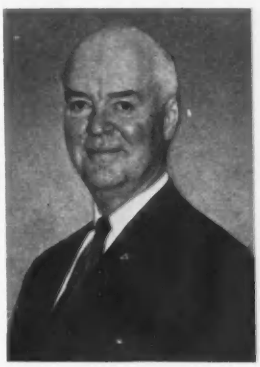
NFPA Serves the World!

The well-known seal of NFPA was adopted by the Association in 1945. It was selected as the best of the emblems designed by members in a special contest won by Harold E. Magnuson of Factory Mutual Engineering Division, Norwood, Massachusetts. The flame on the top of the seal, the initials of the Association, and the image of the world at the bottom convey a simple, but important message — that the NFPA serves the world in providing information on protection against fire.

NFPA membership is in the 50 states, the federal district and three territories of the United States, 10 provinces and 2 territories of Canada, and 65 other countries including a number of federal systems in which separate states are not counted. U. S. and Canada are in red and some of the 745 memberships in other countries are shown by red dots.

In a recent month, FIREMEN magazine went to more than 30,000 subscribers — 28,112 in the United States, 1,943 in Canada, and 249 in other countries. In addition, the *NFPA Quarterly* and the monthly *Fire News* went to all 17,000 members of the Association throughout the world.

People Places Purpose *of the* National Fire Protection Association



by Percy Bugbee, NFPA General Manager

THE National Fire Protection Association is now in its 64th year. It has become the largest organization in the world solely devoted to reduction of loss of life and destruction of property by fire.

The strength of any association is in its membership. Few associations of any kind can match the strength and diversity of the membership of NFPA.

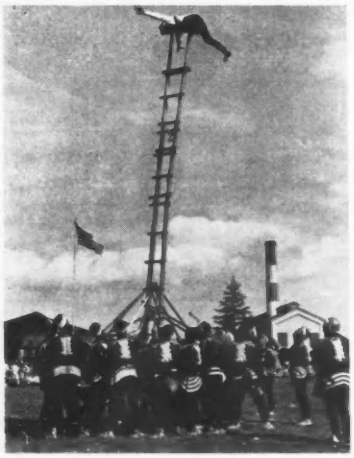
There are presently 200 organization members. Among these are six Federal Government groups — Army, Navy, Air Force, Department of the Interior, Department of Agriculture, and the Federal Fire Council. The principal fire organizations in Canada, France, England, Japan and Germany, hold organization membership in NFPA. Important national groups that hold organization membership include the American National Red Cross, the International Association of Fire Chiefs, the International Association of Fire Fighters, the National Safety Council, the International Conference of Building Officials, the American Institute of Architects, and the American Management Association.

Organization membership in NFPA includes 83 national trade associations. Some are: the National Association of Manufacturers, the Association of American Railroads, the American Automobile Association, the American Medical Association, the American Petroleum Institute, and the National Electrical Manufacturers Association. More than 80 insurance boards and bureaus in the United States and Canada are organization members of NFPA. This includes all of the principal national groups as well as all regional, state and provincial rating bureaus.

Associate membership in NFPA is open to any organization or individual having an interest in fire protection and fire prevention. At present more than 17,000 persons retain such membership. These members come from all of the 50 states, all 10 provinces of Canada and from many other countries. Perhaps the best indication of the wide and diversified appeal of the NFPA can be gained by reading the following brief list of recent new members of the Association:

The Association of Alaskan Fire Fighters, Spenard, Alaska.
Airport Fire Officer, Hong Kong.
Chief, Fire Department, Ankara, Turkey.
Brazil Accident Prevention Association, Rio de Janeiro.
Dr. J. C. O'Brien, Optometrist, Vandergrift, Pa.
Business Manager, Wittenberg College, Springfield, Ohio.
Chief Inspector of Explosives, Wellington, New Zealand.
Chief Fire Officer, Nairobi, Kenya Colony.
W. L. Case, Insurance Company of North America, Singapore.
China Productivity Center, Taiwan, Formosa.
Ford Motor Co., Mexico City.
Helsinki Fire Station, Helsinki, Finland.
Hiram Walker & Sons, Dumbarton, Scotland.
Idea Technology, Inc., N. Y.
Israel Railways, Haifa, Israel.
Jet Propulsion Laboratory, California Institute of Technology.
Manila Gas Corp., Manila, P. R.
Mount Vernon Ladies Assn., Mt. Vernon, Va.
Middletown Sparky Fire Dept., Middletown, Pa.
New Moon Homes, Alma, Mich.
Potato Chip Institute, Cleveland.
Qatar Petroleum Co., Persian Gulf.
Scandinavian Airlines, Stockholm.
Senior Electrical Inspector, Rangoon, Burma.
South African Coal, Oil & Gas Corp., Sasolburg, Africa.
Dr. Henry Sweets, Pathologist, Hannibal, Mo.
U. S. Air Force Academy, Denver.
Welch Grape Juice Co., Westfield, N. Y.

The Kuwait, Arabia, Fire Brigade, a member of NFPA, responds to an alarm. Other organizations typical of NFPA's worldwide membership are shown on the next page.



A Japanese fire department demonstrates the age-old ladder exercise known as Hashigo-Nori in which elder fire department members show their agility and proficiency on a bamboo ladder.

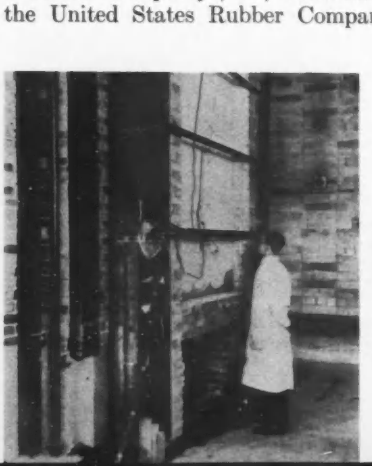
Can you think of any other organization that could attract such a diversified group of interests into its membership?

Readers of FIREMEN magazine will be particularly interested to know that in recent years memberships from the fire service generally have grown at a faster rate than any other segment of NFPA. At present the largest segment of memberships comes from industry, but the second largest membership by far comes from the public service and particularly from fire departments. Now nearly one-third of all of our membership is in this category. The following list of recent fire department memberships again points up the wide appeal of our Association:

Apex, N. C.	Manzanita, Ore.
Bellows Falls, Vt.	New Hope, N. C.
Conora, Sask.	Orangeville, Ill.
Deer Trail, Colo.	Pelican Rapids, Minn.
El Dorado, Ark.	Realto, Calif.
Fort Sumner, N. M.	Sistersville, W. Va.
Gilmanton, N. H.	Skaneateles, N. Y.
Hood River, Ore.	Tappahannock, Va.
Ithaca, N. Y.	Ulster, N. Y.
Joshua Tree, Calif.	Valley Cottage, N. Y.
Killawag, N. Y.	Wildrose, N. D.
Lake Andes, S. D.	Yulan, N. Y.

Do you know that some of America's most distinguished industrial leaders sponsor the NFPA in an annual appeal for support of industry for NFPA?

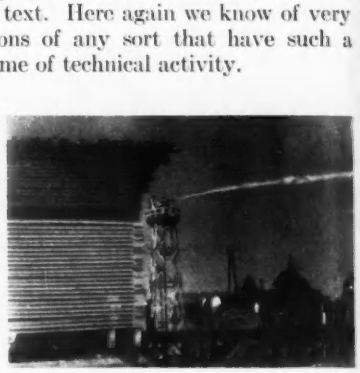
The present Chairman of our Sponsors Committee is H. E. Humphreys, Jr., Chairman of the Board of the United States Rubber Company in New York.



A member of the Swedish Government Testing Institute inspects a sample wall assembly in place for fire-resistance test in the furnace of the Institute in Stockholm.

Other members of our Sponsors Committee are such distinguished and well-known people as Roger Blough, Chairman of the Board of Directors of the United States Steel Corporation; Crawford H. Greenewalt, President of the E. I. du Pont de Nemours & Company; Paul M. Hahn, President of the American Tobacco Company; F. B. McConnell, Chairman of Sears, Roebuck and Company; W. A. Patterson, President of United Air Lines; and Thomas J. Watson, Jr., President of International Business Machines Corporation. Hundreds of well-known industries make annual contributions of funds to the NFPA over and above any memberships that they may hold.

When you stop to think of it, fire affects in one way or another every person and every type of building. That is why, when NFPA undertakes to write technical standards covering the field of fire protection and fire prevention, it requires over 100 technical committees with many hundreds of experts from all walks of life and from all parts of North America participating. The present volumes of National Fire Codes which carry up-to-date and complete NFPA standards run to more than 4,400 pages of text. Here again we know of very few other associations of any sort that have such a comprehensive volume of technical activity.



The Fire Technical Laboratory of the Finnish State Institute for Technical Research conducts tests to determine the effectiveness of monitor nozzles in fighting lumber fires.

The publications activity of NFPA offers some interesting facts. Presently there are 500 separate, current publications available from our Publications Department. These range from comic books and other material for small children, up to our *Handbook of Fire Protection* which is the standard technical reference volume of the world in this field.

During the past year alone we issued 117 new publications. We received 39,000 separate orders for publications and distributed better than eight and one half million pieces of literature.

The annual Fire Prevention Contest conducted by NFPA last year attracted 1,500 entries. Tons of exhibit material were sent in. We can no longer accommodate these entries in our own office but have to rent outside space in another building, and substantial space at that, to take care of them. Still another measure of the wide interest in our work these days is the fact that more than 10,000 individual newspaper stories commenting on some phase or another of NFPA activity appeared during the past year.

NFPA today is truly a world-wide clearinghouse of information on fires, fire protection methods, and fire prevention measures. All members of NFPA can take satisfaction and pride in sharing in a program that offers so much to the safety and well-being of every person and every type of property.

"If you seek a pleasant peninsula, look about you."—State motto

FACTS ABOUT MICHIGAN

For fire chiefs and guests of the 86th IAFC Conference in Grand Rapids

WITH this issue of FIREMEN magazine we pay tribute to the state of Michigan, to the fire department in Grand Rapids, host to the 86th IAFC Conference, and to the Chiefs' Conference. Michigan, with its seven and one-half million population, its 11,000 lakes, its tremendous automotive industry and beautiful resort areas, certainly deserves consideration and, perhaps, a visit by fire service personnel.

Among the United States, Michigan ranks sixth in the number of paid, part-paid and volunteer public fire departments. On June 1 of this year, it was estimated that there were 829 fire departments active in the 58,216 square mile area of the state. Only Pennsylvania, New York, Ohio, Illinois and Iowa have more. Of these 829 Michigan fire departments, 129 have NFPA membership, and some of these are listed below. Also representative of NFPA membership in the state is the list of industrial firms in the right hand column.

On the following pages are reports that describe the fire service organizations in Michigan, including the Grand Rapids Fire Department. Guests of the 86th IAFC Conference may wish to drop in on some of these organizations. Other things to visit in the state include the five-mile long Mackinac Bridge with its 3,800-ft. center span hanging between 552-ft. towers, the excellent trout streams, the forested areas and, of course, the lakeside shipping and resort facilities. Chief Meyers and the men of his department can tell you about them.

Know any of these fire departments and industries in Michigan? All have NFPA membership.

Fire Departments

Adrian Fire Department, Adrian
Algonac Fire Department, Algonac
Bay City Fire Department, Bay City
Birmingham Fire Department, Birmingham
Clark Township Fire Department, Cedarville
Clio Fire Department, Clio
Decatur Fire Department, Decatur
Detroit Fire Department, Detroit
Escanaba Fire Department, Escanaba
Ferndale Fire Department, Ferndale
Flint Fire Department, Flint
Grand Rapids Fire Department, Grand Rapids
Grosse Ile Volunteer Fire Department, Grosse Ile
Hadley Township Fire Department, Hadley
Hartford Fire Department, Hartford
Lansing Township Fire Department, Lansing
Lawrence Fire Department, Lawrence
Menominee Fire Department, Menominee
Mount Pleasant Fire Department, Mount Pleasant
Muskegon Fire Department, Muskegon
Niles Fire Department, Niles
North Adams Fire Department, North Adams
Oxford Fire Department, Oxford
Pontiac Fire Department, Pontiac
Port Huron Fire Department, Port Huron
Reese Fire Department, Reese
Riga Township Volunteer Fire Department, Riga
River Rouge Fire Department, River Rouge
St. Louis Fire Department, St. Louis
Sault Ste. Marie Fire Department, Sault Ste. Marie
Taylor Township Fire Department, Taylor Center
Three Rivers Fire Department, Three Rivers
Vicksburg Volunteer Fire Department, Vicksburg
Walled Lake Fire Department, Walled Lake
Wyandotte Fire Department, Wyandotte
Ypsilanti Fire Department, Ypsilanti

Industry

Abitibi Corporation, Alpena
Ace Chemical, Detroit
Barry & Eaton Mutual Insurance Co., Charlotte
Borg-Warner Corporation, Kalamazoo
Calumet & Hecla, Inc., Calumet
Cleveland-Cliffs Iron Co., Ishpeming
Dana Corporation, Ecorse
Detroit Independent Sprinkler Co., Detroit
Dow Chemical Co., Midland
Eagle Ottawa Leather Co., Grand Haven
Edison Sault Electric Co., Sault Ste. Marie
Fire Master Corporation, Mt. Clemens
Ford Motor Co., Dearborn
Grange Mutual Fire Insurance Co. of Michigan, Cadillac
Greenville Safety Council, Inc., Greenville
Hercules Powder Co., Harbor Beach
Home Guardian Service, Adrian
Hoover Ball & Bearing Co., Ann Arbor
Ionia Manufacturing Co., Ionia
Kaydon Engineering Corporation, Muskegon
Kellogg Co., Battle Creek
Kresge, S. S. Co., Detroit
Lee Paper Co., Vicksburg
MacSim Bar Paper Co., Otsego
Manufacturers Sales Co., Kalamazoo
Marathon Corporation, Menominee
New Moon Homes, Inc., Alma
New Products Corporation, Benton Harbor
Pennsalt Chemicals Corporation, Wyandotte
Phoenix Heating & Sprinkler Co., Grand Rapids
Redmond Co., Inc., Owosso
Reo Motors, Inc., Lansing
Simplicity Pattern Co., Inc., Niles
Socony Mobil Oil Co., Detroit
Tobin Fire Protection & Equipment Co., Royal Oak
Traverse City Iron Works, Traverse City
Unistrut Corporation, Wayne
Viking Corporation, Hastings
Watervliet Paper Co., Watervliet
Whitehead & Kales, River Rouge
Wyandotte Chemicals Corporation, Wyandotte

The Pantlind Hotel will be headquarters for the IAFC conference this year.

THE FIRE DEPARTMENT OF GRAND RAPIDS, MICHIGAN

Host to the 86th annual conference of the International Association of Fire Chiefs

CHIEF Adrien J. Meyers and his fire department in Grand Rapids will welcome the 86th annual conference of the International Association of Fire Chiefs, August 31 to September 3. Headquarters for the four-day meeting will be the Pantlind Hotel. The popular exhibits of new fire apparatus and equipment by manufacturers will be in the Civic Auditorium, right next to the hotel, with an underground passageway connecting the two buildings. Grand Rapids, just 30 miles away from Lake Michigan, is surrounded by beautiful lakes, trout streams and recreation areas.

Chief Meyers' fire department, protecting a city of 185,000 population and a 24½ square mile area, is distributed in 13 fire stations. Four of these are "double company" stations, one houses three companies and single fire companies are in the eight other stations. The 19 pieces of apparatus are manned by 265 officers and men who work a 63-hr. week.

The officer force in the department under Chief Meyers includes a deputy chief, eight district chiefs, nineteen captains, and nineteen lieutenants. A deputy chief is in charge of the training program which he coordinates through the district chiefs who deliver the principal training instruction. Each fire company receives eight hours of training per week from the district chiefs and eight hours from fire company officers.

The department has an inspection division with a chief and four additional inspectors, the latter specializing in heating, churches, schools, industry and commercial buildings. Last year this division made 21,300 inspections.

The arson squad of the department includes a fire lieutenant and a police officer. This pair investigates all fires causing more than $1,000 loss or any fire where arson is suspected. Of 158 cases investigated last year, there were seven convictions.

Grand Rapids features a telephone fire alarm system. Spotted through the city are 285 telephone street boxes which have direct lines through the fire department switchboard. This is manned 24 hours a day by two dispatchers working eight hour shifts, with a supervisor of communications in charge. Apparatus is dispatched through two-way "inter-com" and telephone; or dispatching can be done by radio since all apparatus was equipped with two-way radio in the last few years.

The fire department has 13 pumpers, five aerial ladder trucks and a squad truck in service. Chief Meyers reports that in case of a large-scale fire a recall system is put into effect. For this, the off-duty men return to duty and can man eight engines, two ladder trucks and a squad truck as needed. The squad truck has a 1,000 gpm pump, a variety of rescue tools, oxygen breathing equipment and tanks, resuscitators, and a variety of fire extinguishers.

The Civic Auditorium, connected to the Pantlind Hotel by an underground corridor, will be the scene of manufacturers' exhibits.

A REPORT FROM

THE MICHIGAN STATE FIRE MARSHAL

Glenroy M. Walker
Chief
Fire Marshal Division

MICHIGAN is one of the largest and most populated of the United States. Its great commerce, industry and business development involve a tremendous and varied field which makes extreme demands on the state's fire services, for fire fighting and fire prevention.

Dwelling, commercial, industrial and recreational facilities are spreading rapidly throughout rural areas and into the fringes of our metropolitan centers, creating new problems and new challenges to the state's fire service. But Michigan's fire service has grown with the times and enjoys a fine reputation for high standards in fire protection and fire prevention.

There are 32 organized fire service associations in Michigan from the levels of the state chiefs and the state firemen's association to area and county groups. These organizations have provided excellent communications between the fire departments and our State Fire Marshal service. The associations are active and progressive and have done a tremendous job in promoting training, education and mutual aid programs throughout the state.

The State Fire Marshal service is a division of the Michigan State Police under Commissioner Joseph A. Childs, who is ex-officio State Fire Marshal. The powers of the State Fire Marshal are exercised and performed by officers assigned by the Commissioner to the Fire Marshal Division. The division is under the direction of a Chief, who is responsible to the Commissioner for supervising and administering the State's laws and regulations pertaining to fire investigation, fire prevention and fire safety inspections.

Each of this department's eight districts and the state headquarters at East Lansing have fire marshal division officers who investigate fires and carry out inspections and fire prevention measures.

More than 800 fire departments in Michigan rely on the services of the Fire Marshal Division. In addition to routine work, officers of the division assist in programing and lecturing at various area and regional fire service schools throughout the state, and the division is very active and prominent in the annual state schools such as the Arson Seminar, Michigan Fire College, Industrial Fire Safety Seminar, Fire Chiefs' Training Conference, and State Property Fire Safety Seminar, all conducted in cooperation with the University of Michigan Extension Service. The division also is active in programing and lecturing at the annual Michigan Fire Inspectors' Conference conducted at Michigan State University.

A large film library is maintained at East Lansing headquarters for fire department instruction and public education and is in constant use throughout the state.

Staff members serve on a number of important government committees, including the Governor's committee to rewrite the state housing law, development of a state fire department plan for civil defense, and acting for the commissioner on the State Electrical Administrative Board.

Our division is charged with the responsibility of making adequate and necessary recommendations for state fire laws and regulations and several meetings are conducted each year with leading fire department groups, professional organizations and industrial groups to study and develop existing and proposed legislation.

Field work of the Fire Marshal Division personnel in 1958 resulted in the following recorded activities:

1,830 investigations of fires and explosions,

99 arrests for arson,

4,999 inspections and reinspections of buildings and properties, such as schools, hospitals, churches, auditoriums, dance halls, etc.,

944 theater inspections,

716 dry cleaning plant inspections,

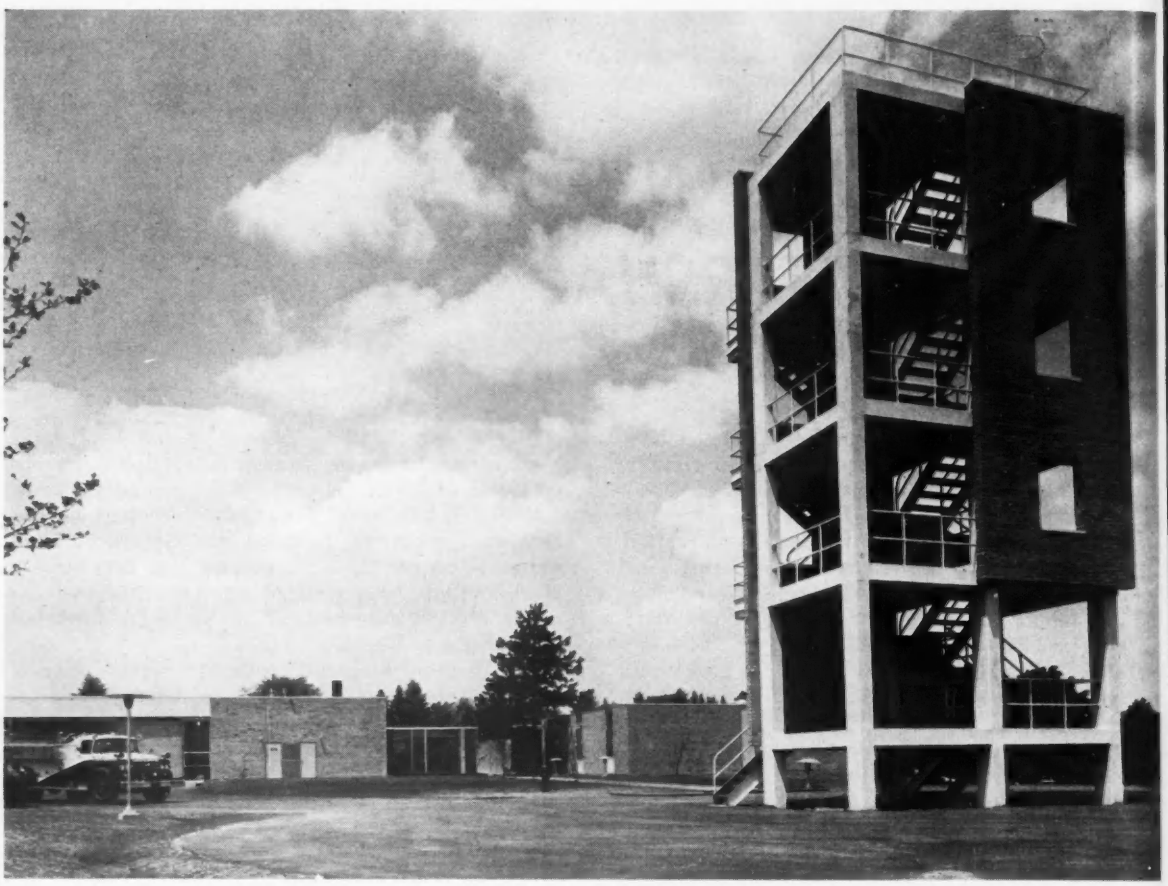
630 inspections of homes for aged persons and nursing homes,

3,488 consultations with various agencies such as police and fire departments, civic and local government groups, architects and various professional people.

The division is responsible for fire safety in state buildings and processes all plans and specifications for new construction and remodeling. There are more than 5,000 state owned and occupied buildings representing millions of dollars in value. Cooperation also is extended to other state agencies on the capital outlay budget for fire protection in state properties.

In 1958, 198 lives were lost by fire in Michigan and 29 per cent of these were children. In the previous year there were 218 fatalities, and 45 per cent were children. It is gratifying to note that in addition to a reduction in lives lost in 1958, the percentage of children's fatalities was substantially lower.

A tentative estimate indicates that our 1958 fire loss in Michigan will not exceed $40,000,000. This is a heavy economic toll, nevertheless there was an improvement over 1957 when the fire loss was $41,205,038.85.



Buildings at the new training center include a central training building in the rear with the apparatus room-auditorium on the left and classrooms and living quarters on the right. In the foreground is the beautiful 4½-story open training tower. Brick facing is in red, reinforced concrete is in white and trim is in blue. This tower provides a variety of hose and ladder evolutions which may be observed by instructors on the ground outside. Sprinklers and standpipe connections are on each floor. Fire escapes are at the rear. Good hydrants are on the ground nearby and a large paved area permits movement of apparatus around the tower. *(All photos by University of Michigan News Service)*

MICHIGAN'S NEW TRAINING CENTER

ON JULY 1, a new civil defense and disaster training center was dedicated on the north campus of the University of Michigan in Ann Arbor. It was built at a cost of one half million dollars, half of which was supplied by the state of Michigan with the rest coming from matching funds through the Federal civil defense program. While the center will be used for general civil defense and emergency training, it also provides excellent facilities for Michigan's fire training program.

Francis Hartman, supervisor of firemanship training at the University, reported that the Michigan Fire College held in June, provided a "shakedown" for the new building and grounds. More than 450 firemen were seated in the apparatus room-auditorium with others in the classrooms. Field operations were conducted at the 4½-story drill tower, the 2½-story fire training building, the flammable liquid pit and other facilities.

The firemanship training program is extensive and actually covers six training categories: town fire schools, industrial fire control programs, regional fire schools, specialized schools, state-wide conferences on training courses and talks and lectures.

As reported in the November, 1958, issue of FIREMEN magazine, 4,165 firemen participated in the training program in a typical year. Full-time and part-time instructors operating under the Extension Service travel through the state for instruction at the town and regional fire schools.

Typical of the special training schools is an 18-hr. fire prevention course, a 30-hr. training conference for fire department instructors, an 18-hr. seminar in arson for the Michigan Fire Chiefs' Association and the

Michigan State Police, a 12-hr. course in fire department administration for chief officers, and an industrial fire control seminar.

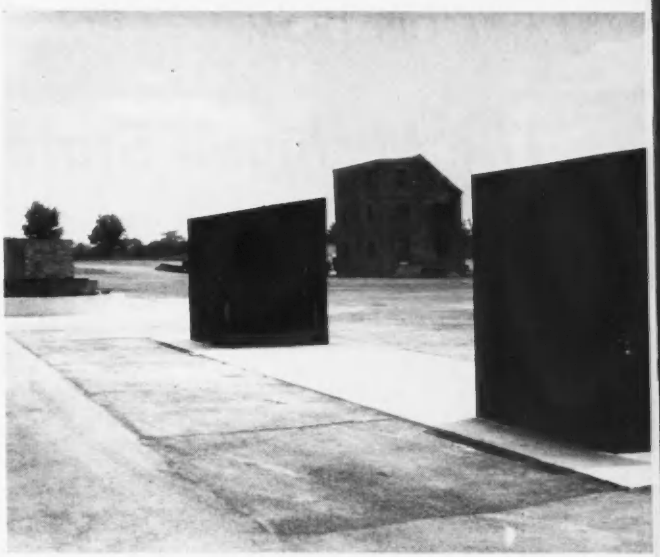
The 31st Annual Fire College, held June 16–18, featured a number of guest speakers for the morning sessions and firemanship training classes in the afternoons. The classes included a 6-hour officers' training session, a 6-hour course in public speaking, a 6-hour inspectors' training course, 1½ hours of structural fire fighting, 1½ hours of flammable liquid fire fighting, and similar periods devoted to ladder and hose evolutions at the drill tower, and pump operations, such as supplying various hose layouts and relays.

Plans for future training in the new center include the scheduling of classes in civil defense, rescue operation, radiological monitoring, health and medical training, and other subjects. The Firemanship Training staff will be supplemented by technicians from the Michigan State Civil Defense staff and from the various educational departments of the University.

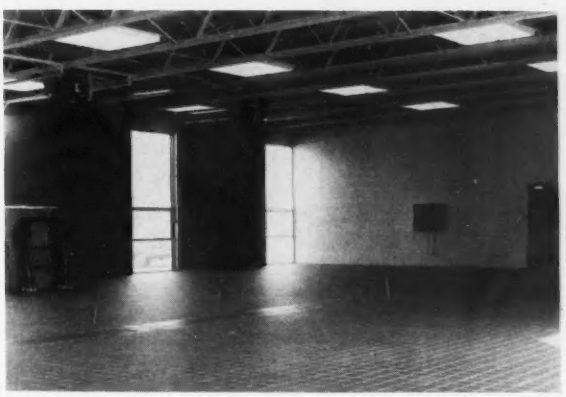
Michigan thus becomes the latest state to provide modern training facilities for its fire fighters. It is significant that the fire service organizations in the state worked together to help accomplish this desirable goal. As reported in previous issues of this magazine, the same results were accomplished in other states because of fire service initiative. Maryland, Pennsylvania and Florida built permanent fire schools some years ago. Tennessee opened its new school in 1958, and Connecticut reopened its excellent facilities at a new site in New Haven last year.

Other states reported to be working towards new permanent training centers are Arizona, Kansas, Minnesota and Ohio.

For the fire service the installations named above and this latest center in Michigan all are part of an encouraging trend for the improvement of that vital operation — the training of fire fighters. (Readers may be interested in a booklet "Firemen's Training Centers," published by NFPA, which shows and describes a number of existing centers and gives practical suggestions for the construction of such centers. Price $1.00 per copy. — *Ed.*)



Experimental burning area with fire training building in the background. In the foreground, left to right, are the rescue training building, two flammable liquid pits of 10- and 20-ft. diameter, and two metalclad buildings in which gas, flammable liquid or combustible metal fires can be built.



This large five-door apparatus room can also serve as an auditorium seating hundreds of people. Doors at right lead to foyer.

This spacious foyer in main training building can be used as a dining area or as an auditorium seating 150 persons. In addition, there is a modern kitchen area and dormitory facilities for 30 firemen.

The main classroom of the Michigan center can seat 100 persons. Accordion partitions permit division of this room into three small classrooms each with a capacity of about 25 persons.

A REPORT FROM

The Michigan State Firemen's Association

GREETINGS from the oldest firemen's organization in Michigan, the Michigan State Firemen's Association. Organized in 1875 with J. H. Cavanaugh of Muskegon as the first president and S. D. Pond of Allegan as secretary, the Association recently held its 84th annual convention in Charlotte, Michigan.

Its purpose is similar to NFPA's, for it is dedicated to promoting the science and improving the methods of fire protection and fire prevention in Michigan. The State Firemen's Association serves some 850 paid, part paid and volunteer departments, industrial fire brigades and county firemen's associations. A news bulletin is published bi-monthly to keep the firemen of Michigan informed of the latest training methods and current legislation.

During the MSFA 1928 convention in Port Huron the members decided that something should be done to improve the training of fire fighters. It was proposed to hold a fire school in conjunction with the next convention in 1929 to be held in Sault Ste. Marie. After that, the school was readily accepted as a permanent program. Among the first instructors were the late Chief J. W. "Jim" Just, then with the Michigan Inspection Bureau, and J. A. Keefe, then a Captain in the Detroit Fire Department. The demand for more training kept growing until a fire school was finally organized on a state level with full-time personnel operating the program. The University of Michigan at Ann Arbor was selected. All groups interested in the prevention of fire, furthering of firemanship training, and the latest methods of extinguishment are represented on a Fire College Planning Committee, which meets at least once a year to set up a program for the forthcoming Fire College. The Michigan State Firemen's Association was also active in helping to obtain the new Civil Defense and fire disaster training center. (See page 22.)

(Above left) Assistant Chief Everett Lamb of the St. Louis Fire Department is president of the Michigan State Firemen's Association. Secretary-Treasurer is Stirling Garrow (above right), member of the Port Huron Fire Department. Immediate past president is Chief Donald Rhoades (right) of Cassopolis.

Cassopolis was the winner of the Waterball Contest shown above at the Michigan State Firemen's 1958 Convention in Niles. Port Austin, winner for two successive years, came in second.

This has not been sufficient. Many volunteer firemen cannot attend the four-day session at the University, so in conjunction with the annual convention a short course in some field of fire fighting or first aid is covered by competent instructors. Regional schools of longer duration are scheduled for other areas of the state.

In 1954 a legislative committee was made a part of the Executive Board of the Association. Through this committee the Association has been able to keep abreast of bills that might affect the fire service. It was able to have legislation enacted so that volunteer fire fighters could use a red light and siren on their cars while responding to an emergency. At present the MSFA and other interested organizations in the state are preparing legislation to be introduced for controlling the sale and use of vaporizing liquid type fire extinguishers in Michigan.

FIRE SAFETY IN THE JET AGE

by George H. Tryon, III, NFPA Assistant Technical Secretary and Secretary, NFPA Committee on Aviation

THE jet age is here! Are you keeping pace with it? Hundreds of millions of dollars are being spent on new airport facilities to handle jet transports. Fire department personnel should take a close look at what is going on at their airports to assure that the new construction will include maximum benefits for life safety from fire.

It is important that fire chiefs discuss the airport's fire protection with the airport manager and other persons in authority.

The following items deserve particular attention. The views expressed are the personal views of the author and do not reflect necessarily any NFPA official standards nor the opinions officially endorsed by the NFPA Committee on Aviation. In the main, the suggestions are those based on a personal appraisal of an interested person and should be so construed.

Broadly speaking, there are two phases of airport operations presenting peculiar fire problems. They include: aircraft take-off and landing accidents (crashes) and ground operations (aircraft servicing and taxiing).

Looking at the crash fire problem first, we must realize that there are some things that we cannot do. We have no control over the pilot's skill or airborne operational difficulties with the aircraft. Our job is while the aircraft is on the ground prior to take-off or after it touches down in an attempted landing. The fire challenge of the modern jet transports, after a ground impact accident, is severe. The crash fire potential in such accidents clearly may go beyond the capabilities of manual fire fighting with mobile equipment. At best, sometimes we will only be able to save lives and not extinguish the fire. With favorable conditions, we may be able to do both.

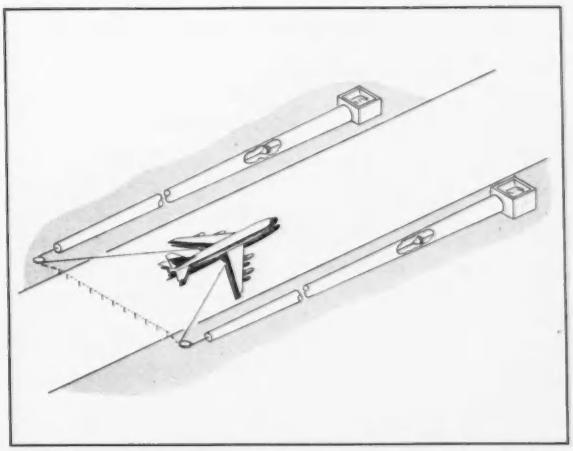
One positive step which deserves attention might be called fire prevention at time of crash. Aeronautical engineers are trying, by use of built-in "inerting systems," to eliminate the sources of ignition in aircraft so often responsible for setting-off fuel spill fires. This work has been reported in the NFPA *Quarterly* (see October 1953 issue, pages 121–138 and October 1957 issue, pages 81–103). Some work to get such crash fire prevention systems installed in aircraft has been completed (see NFPA Aviation Bulletin No. 166), but to date no new commercial aircraft are so equipped. Flight tests have been completed with some military aircraft as reported in a Wright Air Development Technical Report recently released. Even if a plane has such equipment there remains the friction spark problem if fuel spills after a crash (see October 1957 NFPA *Quarterly*, pages 123–133).

Runway Overrun Barriers

One of the worst problems results from runway overruns. It seems that, invariably, beyond the paved surfaces of runways are obstacles which can break open fuel tanks and cause major spills.

What can we do about this problem?

The military has given us a clue by providing overrun barrier protection. This program started about 1950, shortly after the operational advent of jet powered aircraft. Today, over 300 military airfields are equipped with barrier protection. Similar devices on commercial airfields could serve a fire prevention purpose as well as the obvious other benefits. It would seem, from the record, that for the jet transports over-



Overrun protection for commercial aircraft might be accomplished with this type of device. Hook on plane catches cable attached to piston and tube mechanism installed underground. Plane can be brought to halt within runway area. This particular device is designed to halt planes weighing 100,000 to 300,000 pounds, traveling at speeds up to 120 knots. (Drawing by All American Engineering Company, Wilmington, Delaware.)

run protection is needed more now than ever before. This type of protection is not something which simply can be superimposed on an airport, because the aircraft itself should preferably be equipped with a hook as part of the aircraft structure to engage the arresting device. Bringing a fast-moving aircraft to a stop before it crashes through fences, across roadways and into buildings, should be looked upon as a fire prevention approach. Airport managers can't be expected to implement the installation of this equipment without the support of the aircraft operators, but fire service officials can encourage these managers to consider such equipment to reduce the fire problem inherent in aircraft overruns.

Airport Zoning

The second fire prevention approach concerns the clearance of flight pattern obstructions. In 1952, President Eisenhower received the report of his "Airport Commission." This document, known as the "Doolittle Report," has been published by the Air Coordinating Committee. It set up definite recommendations on effective zoning laws for both new and existing airports and it clarified and defined those areas which constituted a hazard to air navigation.

Proper clearance around airports is as important to the fireman as the mobile equipment which he operates should an accident occur. Put your weight behind airport zoning laws to assure that no unnecessary obstructions are present.

Water Mains Along Runways

In almost every crash fire accident on an airport, water is vital. Millions of dollars are being spent extending runway lengths to 10,000 and 12,000 feet, but little is being spent to provide water mains on the edges of aircraft operational runways. With planes carrying 20,000 gallons of fuel, it should be obvious that terrific supplies of water for foam production and fire extinguishment would be needed to cope with any major incident. Attempting to carry enough water on mobile vehicles to the accident slows the speed and acceleration which the vehicles might achieve in making their response. It is obvious that if the response is going to be meaningful in terms of life safety, time is of the essence.

In other words, as a third step, do what you can to get water mains with flush type hydrants installed along your operational runways or at least at selected points from which practical relays might be set up.

Crash Rescue Equipment and Training

Next to be considered is the type of crash rescue equipment provided. The NFPA gives guidance on this equipment in its text on Aircraft Rescue and Fire Fighting Services for Airports and Heliports (NFPA No. 403). The Association has also produced a test procedure for evaluating the capabilities of units that employ foam as the principal extinguishing medium (NFPA No. 412) and some Standard Operating Procedures for employing this specialized aircraft rescue and fire fighting equipment (NFPA No. 402).

Of recent interest is this matter of foaming runways for crash protection. FIREMEN magazine carried special articles on this subject in March, 1958 and July, 1959.

The "Principles of Rescue" and the "Principles of Fire Fighting" for Civil Aircraft have been diagramatically illustrated in NFPA Charts 403-1A, 403-1B, 403-2A and 403–2B. Fire departments are urged to display these charts and make arrangements with aircraft operators at the airports they serve to make personal inspections of *each* type of aircraft in service to see just how doors and emergency exits operate.

Typical overrun occurred in Charleston, W. Va., when this Capital Airlines Constellation skidded tail first over an embankment at right and followed dashed line to area in lower left. (*Wide World Photo.*)

Aircraft Fueling and Airport Fueling Services

Ground operational safety at airports is the second major problem. Jet transports introduce new and complicating factors that fire prevention and protection agencies should watch with extreme care. Perhaps most important is the problem of fueling these new transports. They have a terrific appetite for fuel and the rate of consumption is extraordinarily high. This means that airports must provide adequate fueling facilities and store tremendous quantities of fuels either on the airport or in its immediate proximity.

Fire safety in the design of these systems is of tremendous importance, especially in view of the fact that delivery might reach as high as 1,200 gallons per minute through multiple hose lines to an individual aircraft. A major factor is that these transports cost huge sums of money and every minute they are on the ground the investment is being wasted. Air transport operators will be taking every possible means to expedite ground servicing of these jets and the fueling operation is the most time-consuming ground servicing requirement for a normal airport stop. In 1959 the NFPA adopted a tentative standard on Airport Fixed Fueling Systems (NFPA No. 407A–T) which contains new provisions for these systems.

Oxygen Servicing Safeguarding

Another new problem with the jets results from the increased use of oxygen equipment aboard commercial transports. The NFPA Sectional Committee on Aircraft Maintenance and Servicing has just released a new set of "Recommendations on Safeguarding Aircraft Breathing Oxygen System Maintenance Operations" (NFPA No. 410B) and while some further work is necessary, these recommendations should serve as a reasonable guide to fire safety in handling this problem.

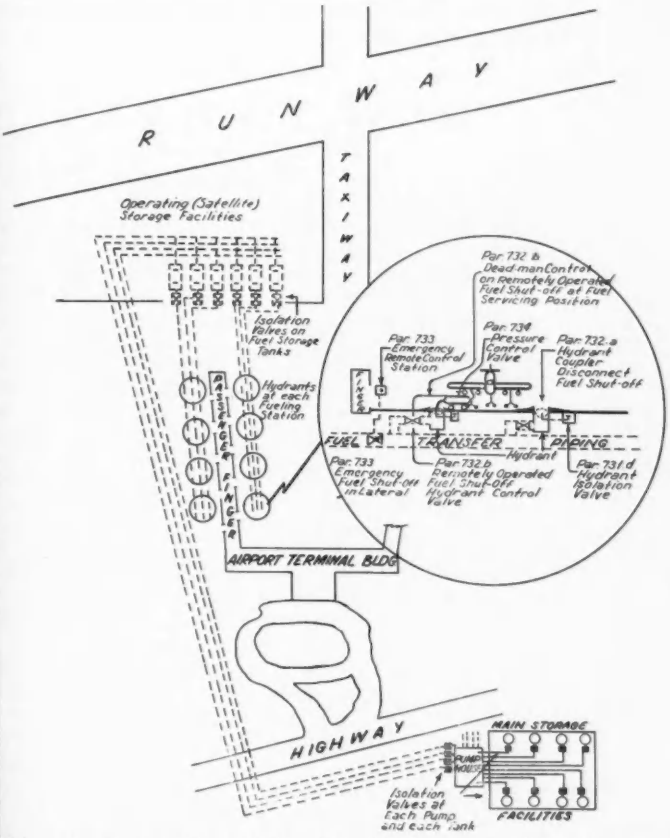
Of particular import is the use of liquid oxygen systems and while no existing commercial transports at present are employing liquid oxygen, it may supplant the gaseous oxygen systems within a few years.

Brake and Tire Fire Problems

Still another problem peculiar to jet transports is the hot brake and tire fire. A number of incidents have been reported (see October 1956 NFPA *Quarterly*, pages 115–120) and some have been attended by explosive rupture of the wheel and brake. The use of magnesium in such assemblies aggravates the extinguishment problem and in a few of the cases explosive rupture of a portion of the landing gear assembly has occurred due to heat exposure and the development of stresses beyond the capability of the metals involved. The Wright Air Development Center has just completed some tests on the extent and nature of this hazard and it is proposed that the NFPA committee analyze this test data to prepare guidance material on how to handle such incidents.

Passenger Loading and Debarking

Perhaps the most pressing problem from a life safety standpoint will be the handling of passengers at loading and unloading airport facilities. Some of these new jets will carry up to 189 passengers. Even during routine loading and unloading, this introduces the possibility of large numbers of people on aircraft loading ramps. Assuming a full load debarking and a new group ready to enplane, plus friends and relatives, you might have as many as 500 people waiting the arrival and departure of a single jet transport. The current practice of permitting passengers to load and unload across airport aprons while fueling and other jet aircraft servicing operations are being conducted in the very same area, becomes even a more serious problem. Some operators are designing elevated ramps to control movement of passengers and to keep them off airport pavements. This is one possible solution, but there are obvious fire safety problems to be considered even with this type of operation. Some airport operators are planning to bring the jets into the terminal area and move them away under their own power. This will produce jet blast and heat effects in the immediate area of the terminal facilities and at some of our present airports, this just should not be tolerated from a safety standpoint. There is no single solution to this problem, but it is probably the greatest life safety question mark that you will be faced with in evaluating the hazards in our new jet transport age.


RUNWAY
TAXIWAY
Operating (Satellite) Storage Facilities
Isolation Valves on Fuel Storage Tanks
Hydrants at each Fueling Station
Par. 732.b Dead-man Control on Remotely Operated Fuel Shut-off at Fuel Servicing Position
Par. 733 Emergency Remote Control Station
Par. 734 Pressure Control Valve
Par. 732.a Hydrant Coupler Disconnect Fuel Shut-off
FUEL TRANSFER PIPING
Par. 733 Emergency Fuel Shut-off in Lateral
Par. 732.b Remotely Operated Fuel Shut-off Hydrant Control Valve
Hydrant
Par. 731.d Hydrant Isolation Valve
AIRPORT TERMINAL BLDG.
HIGHWAY
MAIN STORAGE FACILITIES
PUMP HOUSE
Isolation Valves at Each Pump and each Tank

Schematic diagram of typical airport fixed fueling system illustrating recommended valving.

The day of the fuel servicing tank truck seems to be passing. Fixed airport fueling systems with sub-surface hydrants are taking its place. Here is a sketch of a fixed system as shown in NFPA No. 407A-T — Tentative Standard on Airport Fixed Fueling Systems.

SELECTED LIST OF NFPA AVIATION PUBLICATIONS

NFPA Designation	*Title*	*Price*
402	Suggested Standard Operating Procedures, Aircraft Rescue and Fire Fighting	$ .35
403	Suggestions for Aircraft Rescue and Fire Fighting Services for Airports and Heliports	1.00
406	Aircraft Rescue and Fire Fighting Techniques for Municipal and Rural Fire Departments Using Conventional Fire Apparatus and Equipment	.35
407	Standard for Fueling Aircraft on the Ground	.75
407A	Tentative Standard on Airport Fixed Fueling Systems	.25
408	Aircraft Hand Fire Extinguishers	.25
409	Standard for Aircraft Hangars	.75
410A	Aircraft Electrical System Maintenance Operations	.40
410B	Aircraft Breathing Oxygen System Maintenance Operations	.50
412	Suggested Standard Test Procedures for Aircraft Rescue and Fire Fighting Vehicles Utilizing Foam	.50
413	Fire Hazard Properties of Aviation Fuels	.50
Charts 403-1A, 403-1B, 403-2A and 403-2B	Principles of Rescue — Civil Aircraft and Principles of Fire Fighting — Civil Aircraft (**set**)	.60

Los Angeles, California, November 14, 1958 — One of the biggest traffic tie-ups in Los Angeles history occurred when a truck and trailer carrying 7,500 gallons of normal butane overturned on the Hollywood inbound down-grade. A steel plug was knocked out of a gauging hole in the top front of a trailer. The LP-Gas mixture at 28 psig poured out through a ¾-in. hole, flowing and vaporizing directly into storm drains and gutters. Responding Los Angeles fire fighters covered the vehicle with a water spray stream while Battalion Chief John Dick, wearing a self-contained mask and rubber gloves, used a rubber mallet to drive a tapered redwood plug into the opening, thus shutting off the leak. Fire companies patrolled storm drains for three miles. (*Los Angeles Fire Dept. photos.*)

HOW TO HANDLE

St. Paul, Minnesota, April 29, 1959 — This LP-Gas tanker tipped over on a busy intersection, breaking a street light standard and exposing live electric wires. One engine company, a rescue squad and two district chiefs responded. The tank was covered with water spray from two 2½-in. lines equipped with fog nozzles. Electric power in the street light was cut off and exposed ends of wires were taped. Later, when tanker was being raised with steel cable slings, water fog was used continually to minimize the possibility of sparks igniting any escaping gas. (*St. Paul Fire Department photos.*)

Napa, California, May 8, 1959 — About 12 miles west of Napa, a tank truck and trailer combination carrying liquefied propane overturned at about 6:10 a.m. Fire started immediately and ignited close exposures. About four fire departments responded on mutual aid and also called for assistance from Tidewater Oil Company. When representatives of that company arrived at the fire at 8:50 a.m. they found that propane gas was still burning freely in approximately four different spots on the tank truck and trailer. No water was being used to cool the exposed steel on the truck and trailer tanks. Exposure fires had been extinguished. Being unable to find who was in charge of the over-all fire situation, they finally contacted an assistant chief and advised him that cooling water should be applied immediately on the truck and trailer to prevent rupture of the vessels. It was then discovered that the fire departments had been advised that the shock of cold water on the hot steel would cause the steel to fracture with serious results. The Tidewater representatives finally convinced the fire fighters that there was little danger of this happening and that far more serious results could be expected if water wasn't applied soon. The fire department then set up hose streams and were able to get cooling water on the tank and trailer. This cooling effect caused the relief valve on the trailer to close because it reduced the pressure within the trailer tank and only three small propane fires remained burning on the truck and trailer. In the meantime, representatives from the Union Oil Fire Department at Oleum, and the Standard Oil Fire Department at Richmond arrived. The industry representatives all agreed that the best way to dispose of the remaining propane in the truck and trailer was to extend vent pipes away from the tanks and use controlled burning to consume the remainder of the fuel. This was accomplished and by 7:30 p.m. both truck and trailer tanks were almost completely depressured.

LP-GAS VEHICLE INCIDENTS

DURING the past year, questions submitted to NFPA indicated that some fire department members need more information on vehicles used for transporting liquefied petroleum gas. In general, fire departments have been asking what to do when (1) such a vehicle tips over and the gas escapes without igniting and (2) what to do when the vehicle is involved by fire.

To get answers for these questions, NFPA Gases Engineer Clark F. Jones contacted members of the NFPA Committee on Gases, the Sectional Committee on Liquefied Petroleum Gas and the Liquefied Petroleum Gas Association. The material on these pages represents a summary of the opinions of these people.

It is significant that some fire chiefs still believe that, if fire involves any LP-Gas container, water should not be applied. This misconception perhaps stems from the often-quoted statement that "Hose streams should not be used to *extinguish* a gas fire, especially one that involves LP-Gas containers." As mentioned in this magazine before, hose streams applied properly to the shell of any container of burning LP-Gas will serve to lower the temperature and likewise the pressure of the gas so that the relief valves will close and the fire will subside, thus burning can be kept under control. An incident reported on the opposite page shows how a dangerous situation was corrected by this use of water. If it is possible to shut off the gas supply by closing a valve, this should be done. Otherwise it is best to let the gas burn, keeping the container as cool as possible with hose streams. The danger of extinguishing such a fire before the fuel supply is shut off, lies in the possibility that reignition of escaping gas can occur, perhaps explosively.

Every fire department should be prepared to handle the two basic situations that might involve vehicles carrying LP-Gas. One situation would be when the vehicle is actually involved by fire or dangerously exposed to fire. The second situation would be when no fire is involved but LP-Gas is leaking from the vehicle and is subject to ignition. All fire fighters need to be familiar with the types of vehicles that transport LP-Gas, the general state and local codes pertaining to such vehicles, the general design and function of the vehicle, the location of valves and how they work, the type of gas that would be carried, its working pressure, and other fundamentals.

The fire chief should understand the potential of his department for handling either situation; he should be prepared to call mutual aid from other fire departments, from the police and other civil agencies that may be of help; and certainly he should know where he can contact representatives from the gas industry to advise him in such a situation.

Fire fighters should know what to expect when there is or is not a fire. They should have basic operating plans for controlling either situation. They need breathing equipment, protective clothing and gloves to enable them to move in and close valves. They should be able to maintain good streams of water fog (preferably from 2½-in. lines), from an adequate supply to cool tanks, disperse vapors and protect exposures. Of primary importance, of course, is the protection of life and it may be necessary to evacuate a considerable area when such an emergency arises.

A great deal of helpful information will be found in NFPA Standard No. 58 — Storage and Handling of Liquefied Petroleum Gases. Division III of this standard gives recommendations on tank trucks, semi-trailers and trailers for transporting LP-Gas. The basic information on the following pages should be useful to many fire departments. Readers who have questions on any of the recommendations should write to NFPA Gases Engineer Clark F. Jones.

Portland, Oregon, February 27, 1959 — An LP-Gas delivery truck had just put 1,000 gallons of LP-Gas in a 2,500-gallon storage tank at this filling station. After completing delivery the truck was parked next to a dispensing pump and 100 gallons were transferred to the tank truck. When this was done the dispensing unit was shut off and the driver reached into the compartment to close the tank truck valve. He accidentally bumped the handle on the quick coupling fill valve, releasing the pressure. The tank truck valve was inside the compartment and could not be shut off because of the escaping gas and liquid. The station operator quickly alerted all employees who stopped traffic and attempted to shut off all sources of possible ignition. The station fire hose was put into action and the fire department was called. Flow of the gas was not rapid enough to activate the excess flow valve in the tank truck line. As water struck the leak, ice formed immediately, making it impossible to close the valve. Responding fire fighters put fog lines into action to assist in dissipating the vapor cloud. This was continued for some 35 to 40 minutes until 700 gallons of LP-Gas left in the truck vented safely.

...and from Industry...

Here are some tentative recommendations developed by a group of LP-Gas Industry representatives. The procedures outlined below are still being studied and evaluated, but even in their present tentative state, they provide good information for fire fighters.

Recommended Procedure in Event of Fire Involving or Seriously Exposing LP-Gas Equipment or Serious Leakage of LP-Gas Without Fire

As in any emergency situation, it is of paramount importance to avoid endangering human life in event of fire involving or seriously exposing LP-Gas equipment; or serious leakage of LP-Gas without a fire. Do this by:

Basic Precautions:

1. Approaching the fire or gas leak from upwind.
2. Keeping all persons out of vapor cloud area. If necessary to evacuate any area which is in the path of the vapor cloud, do so immediately, eliminating all sources of ignition at the same time.
3. Policing the area. Keep all persons at least 200 feet away from the area, except those necessary to cope with the condition.

Leakage of LP-Gas Without Fire:

1. If escaping LP-Gas is not on fire, close any valve available which will stop the flow of gas. Small lines such as copper tubing could be flattened to stop flow. If an LP-Gas vehicle is involved, consult the driver; or if storage facilities are involved, consult plant personnel regarding possibilities of shutting off leakage.
2. Water spray is effective in helping to disperse LP-Gas vapor. If available, it should be used as soon as possible, directing the spray stream across the normal vapor path and dispersing the vapor into a safe location. Those handling the hose should avoid entering the vapor cloud and should keep low behind the spray so that they will be somewhat protected from radiant heat if the vapor should be ignited unexpectedly.
3. If the flow of gas cannot be stopped the vapor cloud should be dispersed by some other means. (*The escape of unburned gas forming a vapor cloud may present a greater danger to life and property than where the gas is burning, particularly where there is no valve by which the gas can be quickly shut off. However, there are many factors to be considered such as the possible danger to persons and property due to ignition of the gas and serious liability that might result from setting the gas on fire. It is doubtful whether any fire officer would assume the responsibility for starting such a potentially serious fire with results of ignition so unpredictable. How would you start such a fire with assurance of getting away safely? If the leak occurred on the property of an LP-gas plant under suitable isolation, deliberate ignition might be a solution. It would appear that the best normal solution to dispersing the unburned gas is the old reliable antedote — heavy streams of water from a maximum distance. Make certain pumpers are at a safe location.* — Ed.) Controlled fire conditions involve application of sufficient water to keep the shell of the vessel and any exposed piping cool so as to allow the fire to consume the product without danger of causing failure of the vessel or piping.
4. In some instances of leakage from a tank without a fire, it may be desirable to move the tank to some remote area such as a blocked off isolated roadway or open field where it can leak safely without a source of ignition. However, if this is to be done, it should not be moved in anything but an upright position. Never drag the tank in a manner which might damage valves or piping. Any attempt to turn a tank back upright to move it to some remote location should be done carefully to avoid damage to valves and piping.

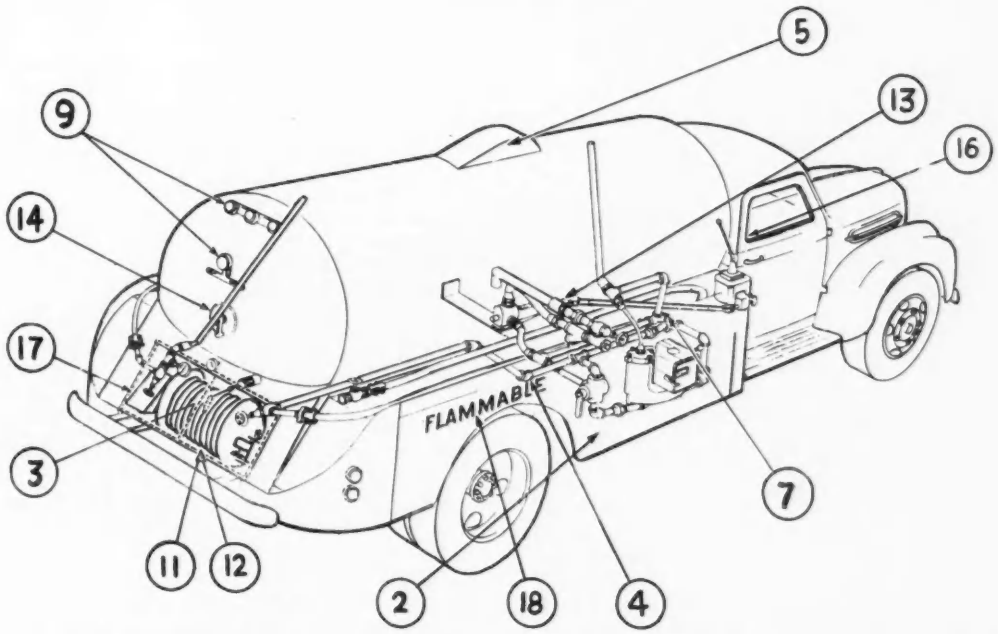
Leakage of LP-Gas Which Is on Fire:

1. Do not extinguish unless leakage can be stopped, except under certain conditions.
2. If the escaping gas is on fire, immediately apply large quantities of water as quickly as possible to all surfaces exposed to heat, with approach to the tank being made from the sides. Concentrate on piping and metal surfaces of vessel or adjoining vessels, equipment or combustible surfaces exposed to flame or intense radiant heat.
3. Consult driver of vehicle or plant operating personnel (as the case may be) regarding possibilities of shutting off fuel supply. Stopping the flow of gas should be the first consideration.
4. If the only valve which can be used to stop the flow of fuel is involved in fire, consider the possibility of effecting shutoff by protecting firemen with water fog streams and protective clothing while they are closing the valve. Proceed slowly to avoid any flash-backs or trapping firemen in the flames.
5. The controlled burning of escaping LP-Gas (which cannot be shut off by closing a valve) is a commonly accepted fire-fighting practice. The application of sufficient water to keep the shell of the vessel and piping cool will allow the fire to consume the product in the tank without danger of causing failure.
6. Dry chemical portable extinguishers are effective for extinguishing small LP-Gas fires. Extinguishing agent should be directed toward point of vapor discharge. Carbon dioxide may also be used.
7. When sufficient water is not available to keep the tank cool, some warning of increased pressure may be noted from the increase in volume of fire or noise level. This should serve as a signal to consider the withdrawal of all men to a safe area.
8. Failure of LP-Gas tanks usually occurs only when some portion of the metal surface in the vapor space of the vessel becomes overheated, softens and weakens to the point that it will not contain the pressure of the product. In the absence of sufficient water to keep the metal surface cool where it is exposed to direct flame impingement or extreme radiant heat, there is danger of the tank rupturing and creating a condition which is commonly described as an explosion.
9. Shooting holes in an LP-Gas tank that is involved in fire does not serve any useful purpose and should not be permitted.
10. Ordinarily, no attempt should be made to move any tank involved in a fire as usually little would be gained in reducing the hazard. However, if specific conditions develop

to where it is considered desirable to move the tank, it should not be moved in anything but an upright position. Never drag in a manner which might further damage valves or piping. Any attempt to turn the tank upright to remove to some remote location or to facilitate product withdrawal should be done carefully to avoid damage to valves and piping.

Serious Exposure of LP-Gas Equipment from Adjacent Fire, etc.:

1. It is always important to control any exposure fire. In addition, in event LP-Gas storage vessels or equipment are subjected to serious fire exposure such as from a nearby burning building or fire involving another fuel, it is of prime importance to apply sufficient water to keep the shell of the vessel and piping cool to avoid any unnecessary release of LP-Gas.
2. If the LP-Gas storage vessel becomes heated to the point of causing the relief valve to function, the discharge should be allowed to burn if it becomes ignited (or in some circumstances, as indicated previously, it is desirable to ignite the discharge) and at the same time continue to apply large volumes of water to the vessel and piping to keep it cool and to allow the relief valve to close after the excess pressure has been relieved.
3. Portable LP-Gas cylinders that are exposed to a serious fire should be moved to a safe location.



What Every Fire Fighter Should Know about LP-Gas Tank Trucks and Trailers

(A useful check list developed by the Safety Committee of the Liquefied Petroleum Gas Association. Reprinted from "LPGA Times.")

1. Code Construction —. Design working pressure —.

These two points are insurance that the tank is being used in the service for which it was designed. Thus it would be unsafe to haul propane in a vessel designed for pressures encountered with butane.

2. Protection of tank, piping and valves against physical damage.

In addition to skirting, bumpers and housings as protection against collision damage, all piping, tubing and fittings should be securely mounted as protection against vibration and breakage.

3. Back flow check valve or quick-closing internal valve provided on filling connection.

Actually, a combination of a back flow check valve or excess flow check and a quick-closing internal valve is probably the best arrangement. The quick-closing valve should also be easily accessible.

4. All fittings extra heavy.

All ferrous threaded fittings and threaded pipe must be designed for a minimum working pressure of 250 psig. Be sure flange fittings and valve packings are drawn up tightly to eliminate leakage.

5. Relief valves — location or protection, rain caps, drain holes.

Make certain that safety reliefs are vented upward and away from the tank with no obstruction so that any escaping gas will not impinge on the tank. If the reliefs have discharge lines, make sure they are not smaller than the relief valve discharge opening. Check also to see that drain holes in the discharge lines are unplugged and free to drain any condensate in them.

6. Relief valves installed on the pump discharge and all liquid lines that may be blocked off.

Lack of reliefs can result in the failure or weakening of the line and fittings since this situation could produce a container 100% full. In this instance, something would have to give because of expansion with temperature.

7. If pump is other than a constant speed centrifugal, is a pressure-actuated by-pass installed and in good condition?

The same reasoning applies here as in checkpoint 6 because of possible pressure build-up with a positive displacement type pump (gear, rotor, etc.)

(Continued on page 56)

SALVAGE WORK BY FIRE DEPARTMENTS

by Warren Y. Kimball, Manager, NFPA Fire Service Department and Editor, FIREMEN magazine.

ALL fire fighters know that salvage work is a significant factor in the reduction of fire loss. In recent years, however, there has been some debate about how much of this work is actually done by fire departments, and how much should be done. The closing of underwriters' salvage patrols in some major cities has focused attention on the salvage problem.

The editors of FIREMEN magazine sent a detailed questionnaire to the chiefs of all fire departments in cities of more than 100,000 population, except where it was known that an underwriters' salvage corps was still operating. A large percentage of the chiefs gave prompt and detailed replies, useful comments and suggestions, many of which are quoted on the next page. The general response was that salvage work is an essential part of the fire department's job and one of the best public relation devices for the fire department.

Only 17 of the 83 cities which have reported had separate salvage vehicles or companies. A number of chiefs indicated that they would like such equipment but that manpower resources would not permit the assignment of personnel.

The vast majority of the fire departments carry from 2 to 40 salvage covers on each ladder truck. NFPA Standard No. 19 — Specifications for Motor Fire Apparatus — calls for 8 covers per ladder truck and the average carried was somewhat above this figure. Eighty per cent of the departments also carry salvage covers on pumpers, in line with our recommendation that each pumper carry two covers. However, some chiefs reported that the covers were provided only on pumpers in districts where ladder trucks were not immediately available, because when a pumper operated at a hydrant its salvage covers might be distant from the fire area.

A large majority of cities also carry salvage covers and equipment on other apparatus including rescue trucks, squad trucks, light wagons and chiefs' vehicles and a number have combined rescue and salvage companies. The cities thus far reporting have on hand nearly 12,000 salvage covers, or an average of 149 per department and a considerable majority have more than 75 covers. These cities reported that over 25,000 covers were spread during 5,600 fires last year, varying from an annual low of 4 to a high of 4,250 for San Francisco. It is worth noting that 32 departments with organized salvage companies spread well over 50 per cent of the total of covers and also spread more covers per fire. The cities having salvage companies were able to spread an average of more than three times as many covers as the cities depending upon personnel from regular fire companies. Practically all the fire departments did salvage work to prevent water damage at incidents other than fires, such as storms and broken water pipes. Only in a few instances were charges made for covers after a prescribed period.

Most chiefs reported that the cost of salvage work was too small to warrant a separate budget item, but data showed that for cities of over 100,000 population the average annual cost of salvage equipment would be about $1,000. The city of Los Angeles, which has 119 men assigned to salvage work, spends nearly half a million dollars for this important activity, but many cities only provide two or three drivers for salvage vehicles so that manpower costs were not high, even where there were separate salvage trucks. In all but two cases, the salvage equipment was purchased under the regular fire department budget, but two cities buy their equipment with money raised by renting salvage covers. Several chiefs reported that they are using equipment obtained from former underwriters' salvage corps.

We were concerned about whether fire departments attempted to restore automatic sprinkler protection, and only 11 chiefs reported that they do not do this work. Three-fourths of the fire departments carry spare sprinkler heads for replacement. A few use sprinkler wedges or stoppers to get the system back in service where there are no extra sprinkler heads on the premises.

The fire departments which were able to furnish information responded to 5,188 calls to sprinklered properties last year, an average of 91 calls per city reporting, and replaced 2,119 sprinkler heads. The city replacing the most heads was St. Louis, Missouri.

The chiefs were asked whether salvage work placed a serious demand upon manpower and nearly one half stated that it did, particularly because of the shortage of manpower, but that it was an essential operation. However, most chiefs reported that salvage did not put a serious demand upon manpower because frequently this work could be done after a fire was controlled. Often spare men were available who could be assigned to salvage work at a fire and all members were trained for this type of work.

Have separate units

Perhaps most important in this survey of fire department salvage work are the comments of various fire chiefs on how this work is carried out. Chiefs having separate salvage companies made the following comments:

". . . We consider that properly conducted salvage operation is one of the most valuable services performed by the fire service." — CHIEF N. L. WHEELER, MIAMI, FLA.

"The service was taken over from the Underwriters' Salvage Patrol and made a part of the regular fire department services in July, 1943. It has become an integral and important part of the department and the services are of inestimable value. The work is constantly being praised." — CHIEF WILLIAM F. MURRAY, SAN FRANCISCO, CALIF.

"We have two salvage units or squads, and I wish we had six. They play an important part in our fire department system and I am thoroughly sold on this type of equipment." — CHIEF HASKELL GRAVES, OKLAHOMA CITY, OKLA.

"We believe separate units in salvage work let both salvage and fire companies do a more efficient job." — CHIEF JOHN C. KLINCK, MEMPHIS, TENN.

"One salvage truck is stationed and answers first alarms in the downtown area, but is subject to special call anywhere in the city. Other salvage work is performed by members of ladder companies." — CHIEF C. M. BULLOCK, HOUSTON, TEX.

"The salvage companies have contributed largely to the lower insurance loss, also to a good public relations program which is evident by the large number of letters of commendation on the excellent work of the salvage companies." — CHIEF W. J. LEWIS, NORFOLK, VA.

Would like separate units

Several chiefs indicated that they would like to have separate salvage companies:

"We recommend at least one truck equipped for general salvage work, also said truck well manned." — CHIEF JOHN R. BUTZ, ALLENTOWN, PA.

"I would like very much to have a separate salvage company, but city finances will not permit hiring of manpower for this purpose alone." — CHIEF MAURICE K. CLARK, WILMINGTON, DEL.

"Salvage is carried on within department. Recommend salvage truck within department when department grows larger." — CHIEF C. D. SIRMON, MOBILE, ALA.

"A better job of salvage could be done if we had salvage trucks and personnel and also the ladder and engine companies who now do the salvage work could be placed back in service much sooner." — CHIEF G. L. SARTAIN, TULSA, OKLA.

Good Will

A number of chiefs mentioned the good will or public relations value of salvage work:

"We have received numerous letters in regards to our salvage work at fires and other emergencies complimenting us on the work done." — CHIEF T. A. DEISE, SACRAMENTO, CALIF.

"We consider salvage to be one of our most vital functions; entering into all phases of our operations, and resulting in incalculable gains in public relations through prevention of unnecessary loss of property and business." — CHIEF G. E. COURSER, SAN DIEGO, CALIF.

"Salvage work tends to be very good public relations for the fire department, besides the savings of thousands of dollars of contents and property from damage." — CHIEF WAYNE E. SWANSON, ROCKFORD, ILL.

"Adequate property protection through salvage work should be a primary concern of all fire departments. This will save an inestimable amount of personal property and is a great public relations factor." — CHIEF CALVIN JOHNSON, FLINT, MICH.

"Work of salvage crew is very much appreciated by property owners. Cuts down fire loss." — CHIEF LEO B. WHEELER, UTICA, NEW YORK.

"Good salvage work reflects good relations." — CHIEF JOHN G. CARLISLE, CORPUS CHRISTI, TEX.

"Salvage is necessary at all fires. It not only reduces the loss, but promotes public relations. I thoroughly endorse it." — CHIEF P. C. FONTAINE, FORT WORTH, TEX.

Cost

The questionnaire was concerned with the cost of salvage work. In this connection the following comments should be of interest:

"I suggest that insurance companies purchase the salvage covers for fire departments." — CHIEF FRANCIS T. SCULLY, WATERBURY, CONN.

"Cost of manpower too serious to operate salvage truck. Training of all personnel for this dual role is our answer to this need." — CHIEF RAY W. MILLER, PEORIA, ILL.

"Have requested replacement of covers from insurance companies but as yet have not received any. No new covers have been replaced since Salvage Corps was removed." — CHIEF PAUL R. FLYNN, DULUTH, MINN.

"We firmly believe and maintain that use of salvage covers is not the function of municipal fire departments. We suggest that such work be the responsibility and function of privately owned units, such as the salvage patrols under the National Board of Fire Underwriters. We practice salvage by minimum use of water, reduced streams and fog, and by removal of merchandise endangered by fire, heat, smoke and water. We also promptly remove smoke by use of smoke ejectors, and water by use of pumps." — CHIEF EDWARD E. WISCHER, MILWAUKEE, WIS.

Manpower

Question 18 is concerned with to what extent salvage work is a drain upon fire department manpower. The following comments are of interest:

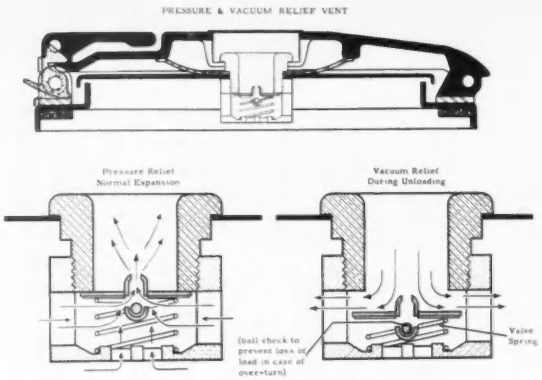
"Salvage operations occur after immediate emergency is over, therefore do not constitute a serious threat on manpower in a city the size of Fresno." — CHIEF GAYLE V. COGER, FRESNO, CALIF.

"After the fire is out, all men responding to fire, work together in salvage operations." — CHIEF JOHN MASSA, GARY, IND.

"Salvage work is a very worthwhile and necessary function of the Des Moines Fire Department. It pays dividends, but takes considerable manpower to properly carry on adequate salvage operations." — CHIEF WAYNE E. ULM, DES MOINES, IOWA

(*Continued on page 48*)

Pressure-vacuum relief vents are contained within dome cover.



Detail of manhole vent shows how pressure relief is secured from one type of vent and how spillage is prevented.

- **Emergency Vents**
- **Internal Valves**
- **Shear Sections**

MEMORIZE THESE TANK TRUCK ESI

by Miles E. Woodw, Flamma

Next time you see a flammable liquid tank truck, take a moment or two to study its design. See if you can spot the vents and try to visualize where the valves and internal piping are located. Then ask yourself what your fire company would do if it had to respond to an accident or fire involving that truck.

The article on these pages should help you make a good analysis.

FLAMMABLE liquid tank vehicles are designed to withstand rough usage as well as to reduce the possibility of fire. The design and operational requirements for such vehicles are covered in NFPA No. 385*, and are of considerable importance to fire fighters.

Upon responding to a fire involving such a vehicle, the fire fighter should try to learn the type of flammable liquid it is carrying and whether the cargo tank is made of steel or aluminum. However, regardless of the contents or metal, there are certain basic design features which he must know in order to handle certain types of tank vehicle fires effectively. Three of these important design features are: emergency venting; internal valves; and shear sections.

Emergency Venting

Many people think that a tank vehicle will explode or rupture violently if a ground fire involves the cargo tank. However, even though fuel tanks and tires have ruptured from overpressure during such fires, the NFPA has no record of a flammable liquid tank vehicle's cargo tank rupturing violently from overpressure or exploding because of a ground fire. This is not to say that it couldn't happen — it might if the cargo tank rolls over without puncturing and the vents are under the liquid and cannot operate. A ground fire also might rupture a tank vehicle designed for carrying flammable liquids which have vapor pressures higher than gasoline.

As an example of the misconception of what actually happened during a recent tank vehicle fire in Pennsylvania, consider this item published in a newspaper:

"1,000 gallons of gasoline and 85 gallons of oil in a tank truck exploded with a roar today several seconds after its driver fled for his life. The driver waved frantically and halted oncoming motorists . . . his warning undoubtedly prevented a tragedy."

State Fire Marshal Lawrence L. Priar in a letter to the NFPA reporting on this fire stated:

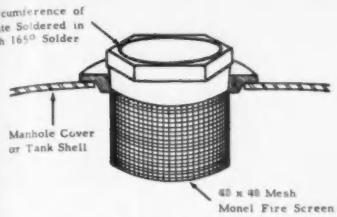
"The only resemblance to an explosion occurred when three of the tires burned and escaping air made a loud noise."

One of the principal factors that prevents violent rupture of these cargo tanks when they are exposed to ground fire is the presence of large emergency vents required on flammable liquid tank vehicles. NFPA No. 385 states that emergency vents on tank vehicles "shall be provided with a minimum free-venting opening having a net area in square inches equal to 1.25 plus 0.0025 times the capacity of the cargo tank or compartment in gallons." This emergency venting may be activated by pressure or by heat. On some truck cargo tanks the entire dome cover serves as an emergency relief since it is held in place by a spring. Whatever the case, when these vents are of proper size and design, they will open to relieve pressure or heat that may build up in the tank.

Internal Valves and Shear Sections

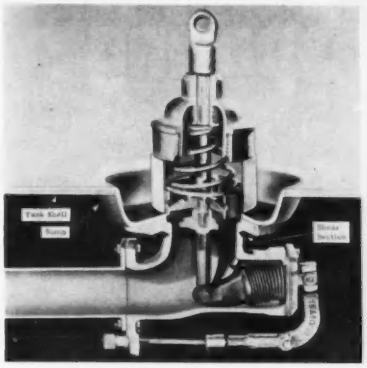
A typical accident to a tank vehicle might cause breakage of the piping or the discharge valves. Piping, for example, might break if the truck is in a collision with another vehicle or with a stationary object. In

*The Recommended Regulatory Standard for Tank Vehicles for Flammable Liquids, NFPA No. 385, 1959. Available in separate pamphlet form for fifty cents and published in Volume VI of the National Fire Codes.



FUSIBLE PLUG
(1 FOR EACH COMPARTMENT)

Fusible plug may be provided for emergency relief on the top of the cargo tank or in the dome cover.



Cross section of an internal shut-off valve inside tank shell with shear section to leave valve shut if line is damaged during a wreck.

Shear section protecting internal valve in a specially designed steam heating system. Note portion of remote control device appearing directly under the hand.

ESIGN FEATURES!

A Flammable Liquids Engineer.

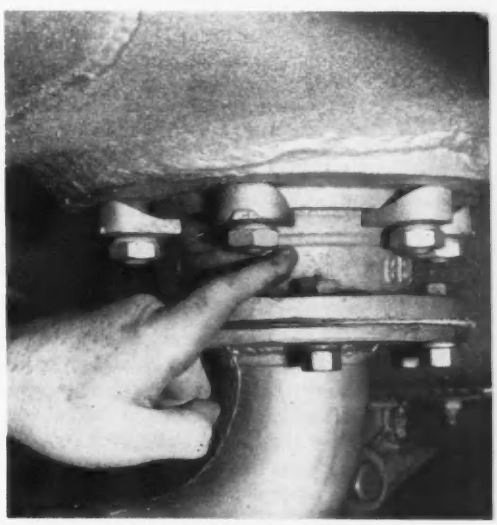
order to prevent the entire tank contents from being emptied through the broken piping, a valve is included in the piping inside of the cargo tank. This is required for all flammable liquid tank vehicles except those carrying heavy or viscous oils. To protect this internal valve from severe strain which could be placed upon it, a section of the pipe directly below the tank has a shear section with reduced metal thickness. This makes the pipe weaker at this point, so that it will break before the internal valve is damaged.

When a fire or a spill happens during delivery operations at a service station, the normal shut-off valves may be in the fire or spill area, and might be inaccessible. However, the flow of gasoline can be stopped by a remote control which is provided for the internal valves. This control normally is located on the opposite (usually left front) side of the tank from the regular controls, and has a fusible section which, when fire occurs, will close the internal valve automatically.

Fire fighters should know if tank vehicles operating in their areas are equipped with these important emergency valves and controls. If tank vehicles have these recommended design features, serious fires can be minimized. Without such emergency controls a major fire can occur which can complicate the fire fighters' problems of attack and control.

Many readers might be interested in a 12-minute film, entitled "Tank Truck Inspections," available for purchase or loan from the National Truck Carriers, Inc., 1424 Sixteenth Street, N.W., Washington 6, D. C. This training film demonstrates very clearly the operation of internal valves and the location of remote controls and shear sections.

Other articles on flammable liquid tank vehicles and fire fighting experiences of fire departments have appeared in the January 1955, September 1957, and February 1958 issues of FIREMEN magazine.



Shear section on another and more common type of tank vehicle.

Common location of secondary and remote control for the internal valves. Shown is one type of remote control device.

Spacing Fire Alarm Response

by Rexford Wilson, Engineer, NFPA Fire Record Department

Here is an excerpt from the report of Sir Maltese Cross, the famous interstellar explorer, describing his recent exploration of Planet No. 1896. This unusual report has aroused world-wide interest since his announcement that Planet No. 1896, though somewhat smaller than earth, has a land area which resembles the North American continent almost exactly. We are grateful to Sir Maltese for his permission to reprint the section of his report devoted to fire alarm response since the ideas might well be adaptable to our alarm response systems on Earth.
R. W.

Quote from Sir Malcom's report:

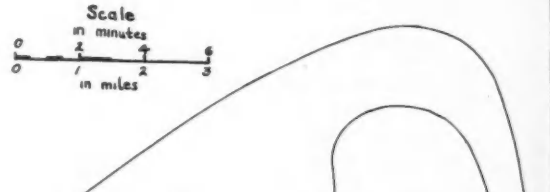
". . . I found the natives almost friendly — reminding me somewhat of the Americans. One chap, Nodge Spanner, a 'chief' in the fire service, was particularly hospitable and helpful. . . .

"Chief Spanner had great pride in the planet's fine system of alarm response for he had invented it. His pride was well justified for the system had just been officially adopted by the I.F.P.A. (Interplanetary Fire Protection Association) as an Interplanetary Standard, even though it had been successfully used on Planet No. 1896 for over ten years.

"In order to enjoy the cleverness of Chief Spanner's scheme you must understand two things about the political organization of Planet No. 1896. First, the smallest political subdivision of the planet is a 'litic.' These 'litics' are so similar to an earth town that I shall henceforth refer to them as towns. Second, a grouping of these towns is called a 'polylitic.' The 'polylitic' is a close cousin to the American county and I shall use the term county hereafter.

"When Nodge Spanner took over as chief of a small town about twelve years ago, he was disturbed about response to the alarm of fire. He had heard of cases where only a handful of men would respond, where a town wouldn't call for help soon enough and where only one or two engines would be available at the crucial early moments of the fires. And there was the problem of the homeowner who just happened to be located near the outskirts of a town and who would be expected to wait for 10 or 15 minutes for his own town's fire department to arrive when just two minutes away stood another town's fire department poised for response.

"But the problem that continually irritated the chief occurred in his own town. The map of his town resembled a goose that was drinking water from a pond. The fire station was located in the 'goose's belly' (F). Every time there was a fire in the 'goose's head' (intersection V) the chief's department would drive through a neighboring town which stretched up into



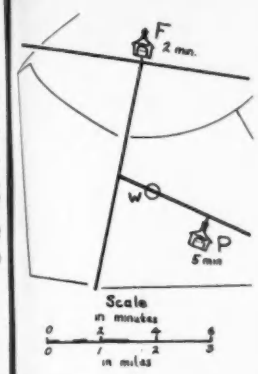
the loop under the 'goose's neck' and drive right in front of that town's fire station (T). If they arrived and found that they needed help they would then call the town they had just passed. This procedure required 13 minutes for the first engine to arrive and an additional five minutes for nearby help to reach the area. Chief Spanner wondered 'Why not at least send the other department (T) at the same time we roll?'

"The chief realized that to be really successful the fire service must provide (1) *quickest* possible rescue, with (2) *prompt* extinguishment. This meant then that trained men, with enough equipment, must respond to the fire as soon as possible. Men, equipment and time were the problems to be solved.

"The chief challenged the problem by obtaining a map of the county. On it he plotted the location of each piece of equipment. Next to the location of each piece he put the time that it took to get that piece on the road, fully-manned, under the worst conditions. In some fire departments the daytime was the worst for most of the men worked out of town. In other departments the night was worse for the men worked near the

station but slept several miles away. In some cases there were paid crews that could 'road' an engine within 25 seconds of the alarm day or night.

"He then attempted to map the first due areas for each engine using the time-to-arrive as the basis for comparison. This was done by figuring 30 mph or two minutes per mile for standard travel on the routes of response. This travel time was longer wherever natural causes such as grade crossings, drawbridges, or traffic conditions could be expected to interfere. The next step was to find the 'point of equal response' between the stations, allowing for the time it took to road the truck. For instance, it took five minutes to road a truck in Town P so that truck could only travel one mile (or seven minutes total) before it reached the point (W) where Town F's truck, roaded in two minutes, was in five minutes of travel time (2½ miles). This was the point of equal response and the dividing line between first due areas on that road. The same process was used to find the point of equal response on all other roads. The points were then connected to outline each engine's first due area.



"Dead ends are served by the company which first arrives at the entrance to the dead-end street. Take the case of dead-end street X. Volunteer company L arrives at the entrance to dead-end street X before paid company B. Since the entrance to street X is in L's jurisdiction then the whole street falls in L's territory.

"A similar situation exists with development Y. Since all entrances to the development lie within the first alarm area of company P, company P would be the first to arrive at any portion of the development, therefore the development lies wholly within company P's first alarm area. If the point of equal response W was between the entrances of the development then individual points of equal response would have to be calculated for each road in the development.

"Another related situation occurs at bridge Z, which has a carrying capacity of only six tons, so that no fire apparatus from either company B or company P could cross it safely. Therefore, the bridge had to be treated as a dead end. One part of the road lay in company B's territory and the other in company P's while the bridge became the dividing line between the first alarm territories of the companies.

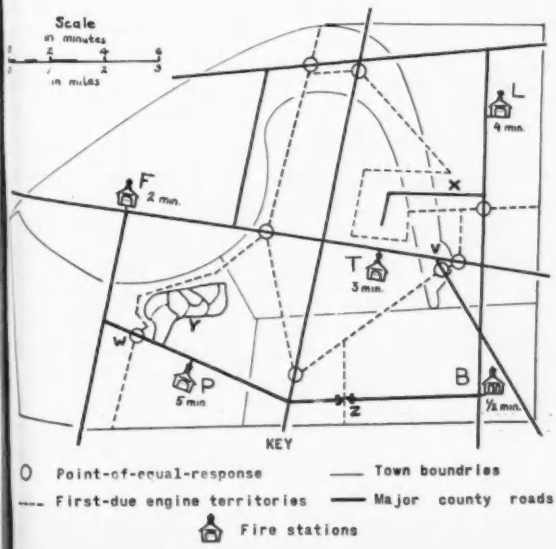
"Another map was used to find the second due areas, and the third due areas, and separate maps were made for the rescue and ladder companies' response areas. Thus, each alarm of fire would be answered by three engines, a ladder and perhaps a rescue unit — all fully manned. It was interesting to note that in some cases one station could contain both the first and second due engines, while another station might be able to road only one of its two engines due to limited manpower (only one engine could be counted on to respond since there were times when a full crew could not be mustered for the other engine). But the determining factor in each case was the time of response, and not the distance or the political subdivision of the area involved.

"With the plan laid out Chief Spanner reviewed his original problem at intersection V. The first alarm company is company T which is due to arrive under the worst conditions in five minutes. The second due engine company and the responding ladder company came from company B which will arrive, at worst, in six minutes (one minute after company T). The third due engine was company L which is due to arrive in 11 minutes (five minutes after company B and six minutes after company T). So now there are three fully manned engine companies and a ladder company on the scene a full two minutes before the old system would have delivered the first engine — and interestingly enough, not one of the responding companies was from the town actually involved.

"Now that it had developed into a full grown scheme he took a deep breath and submitted the plan to the other chiefs in the county. The chiefs received the plan with enthusiasm. They realized that this would give the man in trouble better service, for they knew this man would not care whether the truck came from Town F or Town B, provided it came fast with enough trained men to do something when they arrived. The chiefs also realized that this system could easily be established by proper study of the legal and political situations.

"The additions the other chiefs made to the plan were to include a general alarm response pattern, to provide for 'covering in' on an automatic basis, and to provide for additional special call equipment. All they had to do now was to sell the idea to the public so that a central alarm office for the county could be built. The system was immediately and well received by the Planet Press and the public. Respect for the fire service began to bound upward so that the money for a fully-manned, professionally run, completely equipped central alarm

(*Continued on page 42*)



Mr. Maltese was amazed at the practical response system developed by Chief Spanner.

HOW TO WIN

PUBLIC SUPPORT

Some practical suggestions given at the 1959 Connecticut Fire Officers' Conference by Deuel Richardson, Manager, NFPA Public Relations Department.

THERE is nothing mysterious about public relations. The chief ingredients are just common sense and a certain amount of good judgment, along with a dash of imagination.

Yet a misconception that public relations is only for the experts has caused many fire departments to shy away from including it in their operational plans.

This is regrettable, because well-handled public relations can contribute a great deal to the successful operation of a fire department. The concrete results can be better morale throughout the department, better recruits in the fire service, more public attention to correcting fire hazards, and even more public support for additional tax money allotted to the department budget — a wonder of wonders in this day of the tax squeeze.

This last-named result is entirely possible. Check any city or town where requests for more money in the fire department budget get a respectful and friendly hearing, and almost invariably you'll find the department is doing a good job with public relations.

Very simply, public relations can be likened to a length of hose carrying water from one place to another.

The water source represents your fire department — or to be more exact, information about the department's make-up, its purposes, what services it is rendering, what it would like to do, what its needs are.

Put some of that informational water in the hose, make sure all the kinks have been taken out, and start up the pump. If your aim is any good at all, you can't help getting that informational water to your target — the people of your community.

Our purpose is first to let the public know how the department operates, how it spends its share of the taxpayers' money, how it serves the community; and second — if we are to do the complete, all-round fire protection job — to inform and encourage the public to follow sensible rules of fire safety.

If we tell our fire department story honestly, if we do our safety teaching with some degree of effectiveness, public opinion will change in our favor.

Releases — Talks — Participation

Let's consider the "hose lines" through which you get this information to the public.

The obvious ones, of course, are newspapers, radio stations and TV stations. Most communities have one or more. We won't take space to go into the mechanics of furnishing material to them — you can find helpful hints on preparing news releases and setting up programs in NFPA publications and elsewhere. But I might add this: most newspapers and stations welcome any news material you supply them, and are glad to work with you on any campaigns with a public service angle. You may find them less generous when it comes to publicity for money-raising affairs like dances or carnivals.

Then there are talks before various groups — service clubs, church organizations, schools — which provide a real opportunity to tell about the department and what it means to the community.

Perhaps a less obvious "hose line" is the active participation of fire department personnel — both officers and men — in community affairs.

I am not referring to participation of the department itself — furnishing units for parades, or supplying manpower for Heart Fund or Cancer drives, for example — although these are also valuable opportunities.

And I am not referring to fire department members serving on committees and working with groups in connection with fire prevention efforts, valuable as these opportunities are.

I mean participation of department members as citizens of the community apart from their occupation. This might include everything from taking an active role in the PTA, youth organizations and church groups, or attending legislative meetings or City Council hearings. There is no better way to show people that the department functions as a good citizen than for members of the department to be good citizens as individuals.

This is the *kind* of information from and about your department that really makes the difference, that determines in the long run whether the public rates the department as a highly essential community asset or as something which grudgingly it has to support.

What to Do with Your News

In the regular fire fighting and enforcement functions of the department there are plenty of opportunities for newsworthy items. The list might start with such things as promotions and elections of officers, new members received into the department, unusual services by department personnel and the department itself.

Something often overlooked is the annual fire department report. Instead of being a dull account of the number of personnel and how much money was spent, it can be an interesting report of the accomplishments of the year, the fire record of the community, plans for the following year and department's needs. And instead of having it end up only as a page in the town report, someone should remember to pass it along to the newspapers and radio stations.

We ought to include on our list statements made in connection with violations of ordinances, or about haz-

ards noted during inspections — keeping in mind that this is a chance to make constructive suggestions on how others can avoid and improve these conditions.

Let's not forget statements in connection with fires. Newspapers and broadcast stations always want to know the details, including the cause and the amount of damage. But I am surprised to see so little evidence that fire department spokesmen take advantage of this opportunity to preach fire prevention.

It would take only a brief addition to the information newsmen ask for, like "This fire points up the need for keeping stores free from rubbish; we could eliminate better than five per cent of all fires if we did this one job," or "People have got to remember that space heaters are always a dangerous fire hazard; they must be used with extreme care."

How many fires were there in your community last year which were of consequence, or which could have been of consequence? If statements like these had been tacked on to the news reports of only half of them, figure for yourself how many times useful information on fire safety could have been passed along to the public.

Annual reports and statements will do a pretty fair job of helping people to a better understanding of the department. But they will do only a limited job of helping people to a better understanding of fire safety practices, which is an equally important objective of our public relations program.

Most departments stage special campaigns during Fire Prevention Week and many schedule Spring Clean-up campaigns. These provide an opportunity to do some education work, but they have the weakness of being one-shot affairs, here today and gone tomorrow.

We all know that human neglect and carelessness are behind practically every fire and fire death. It's obvious we aren't going to cure this situation by telling people two, three, or four times a year to watch out for fire hazards.

Picking the Program

So, the No. 1 proposal for your educational public relations effort is a year-round program of fire prevention.

One idea, briefly, is to take a theme or objective for each month of the year — home fires, for example, or brush fires — and concentrate on telling every man, woman and child how to avoid the hazard.

Here is what the program should accomplish. It alerts *all* people every day of the year to the awareness of fire hazards. Even if some theme you pick for one month doesn't concern many individuals — let's say motor boat safety or barn safety, and they don't have a boat or a barn — they are reminded of fire and its dangers.

This can't miss being reflected in the fire record of your community.

For the fire department, such a campaign shows a strong concern by the department for the welfare of the people in the community, and is pretty conclusive evidence that the fire department is always in business — not just "resting" between fires.

Is it difficult to set up and carry out?

It might be if the job were left to one man in the department. What is needed is a fire prevention committee working under the general direction of the chief or other administrative officer of the department. It should be a comparatively small group from various elements of the community, people who have a reputation for getting things done. Key members might come from newspapers and radio stations, from youth organizations and service clubs.

The next step would be to select a theme or objective for each month of the year and to plan a program of activities to carry out this educational job.

You might plan a home fire prevention program, for example, and arrange to present it to school children at their assemblies, and to meetings of organizations like the PTA and service clubs. Distribution of pamphlets and home inspection blanks is important for these meetings.

Another theme might be the fire hazards of smoking, both in stores and commercial establishments and in homes. You might tie it in with a poster contest among school children, displays in stores and factories, signs on street trash receptacles.

There is no lack of themes, for sure — electrical hazards, heating equipment hazards, life safety suggestions, school fire safety, how to call the fire department, unattended children hazards, brush fires, and many, many others. The important thing in their selection is to make them as timely as possible and to connect them insofar as possible with the most important fire problems in your community.

These special monthly activities need to be combined with newspaper stories and radio station spots. You would want to get the papers and stations very early into the planning of your program, to secure their interest and active cooperation.

Plan a Year Ahead

It's essential to plan for a whole year in advance, to split up the work into small pieces and have your committee members take on the individual assignments which will assure that the whole program is carried out.

How to set up a plan like this has been spelled out in great detail in an NFPA publication, "Program of Pre-Fire Planning and Fire Prevention," prepared by the Committee on Rural Fire Protection.

This plan has been tried in a number of communities with great success.

Perhaps you would rather concentrate on educational activities with children, in cooperation with the schools or as a separate activity for younsters outside school hours — with a Sparky's Fire Department, for example. There is a tremendous potential in this field. If only we can reach children at the impressionable age often enough, in the right way, and with the right material, we might help to bring up a whole new generation which almost instinctively knows and follows the basic rules of personal fire safety. It wouldn't wipe out fires, of course, but it might erase a large part of that tragic yearly record of fire deaths.

Perhaps you would prefer a program of in-service home inspections, which has proved so effective in an increasing number of communities throughout the United States and Canada.

The important thing is to adopt and carry out a program, whatever it is, that will be of *positive benefit* to your community.

That's the only way you'll get all the *positive benefits* from your public relations.

SOME COMMENTS ON

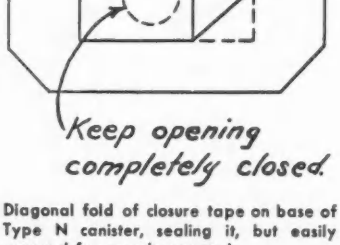
RESPIRATORY EQUIPMENT

From a talk by George L. Morse, Product Line Manager, Oxygen Equipment, Mine Safety Appliances Company, Pittsburgh, Pennsylvania, at the Fifth Annual Connecticut Fire Officers' Conference

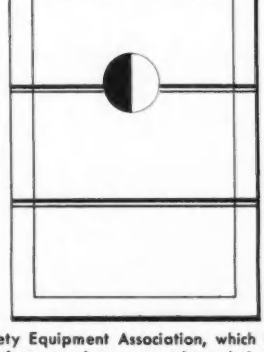
RESPIRATORY protection for the fire service can be covered generally by discussion of gas masks and self-contained breathing apparatus.

The gas mask applicable to the fire service is the one known as Type N in Bureau of Mines Approval Schedule 14, since it is the only one which removes carbon monoxide. There are a number of trade names for these masks, but they are all essentially the same. In addition to carbon monoxide they will remove by some means, such as chemical sorption or reaction, all other normally encountered toxic gases. There has recently been a major change in these masks which I regard as the most revolutionary in the last twenty years. It is the use of an indicating window in the canister. This development, which has been approved by the Bureau of Mines as an extension of the basic approval on the masks which have been approved for many years, represents a joint effort of all manufacturers making this type of mask.

Ever since the Type N Mask came into use, a mechanical timer has been used with it to indicate a nominal two-hour service because this mask provides protection against carbon monoxide. Some means is necessary to indicate when the protection period has ended for this colorless, odorless, tasteless and non-irritating insidious poison which cannot be detected, as can most other gases, by the senses of odor or taste. The timer, as used by all gas mask manufacturers, was the result of careful design. Full testing was done not only by the manufacturers but also by the Bureau of Mines before it was put in service. This "timer" so called, is actually a respiration counter or volume of gas passage indicator. It was tested on the basis that when it had completed its cycle the ability of the canister to effectively remove carbon monoxide was almost ended. It has done a good job over many years and was the best known method for determining when a canister should be replaced. However, it does not actually indicate the condition of the canister itself and, particularly if used incorrectly, might cause a canister to be discarded prematurely or after it had ceased to provide maximum protection.



Diagonal fold of closure tape on base of Type N canister, sealing it, but easily grasped for speedy removal.



The Industrial Safety Equipment Association, which includes a number of gas mask manufacturers, last year adopted the window indicator for Type N masks. As shown above, one half of the window has a reference color; the other half has an indicating color. When both colors match, the service life of the canister for protection against carbon monoxide is finished.

Therefore, after several years of intensive effort by all manufacturers a means of revealing the exact condition of the canister itself, as far as carbon monoxide protection is concerned, resulted. The principle is simply the use of an indicating paper in the canister window which changes color when the catalyst for converting carbon monoxide to harmless carbon dioxide is no longer fully effective, even though it is still functioning and providing protection.

This type of canister, which has now replaced the earlier canisters, does not require the use of the timer, which has been replaced with another advancement known as the external check valve. This valve, which was developed because of the heavy load put on the canister when fog and "wet" water are used, materially improves the effective life of the canister by protecting it from moisture penetration from the top whether the canister is in use or not. I do not mean to convey the impression that the canister service life is now extended beyond a two-hour period, because, under severe use, the service life may be reduced to less than two hours. However, the canister with the indicating window in conjunction with the external check valve provides a positive means of knowing whether an opened canister is still serviceable regardless of how long it has been in service. No longer will it be necessary to discard a canister arbitrarily one year after it has been opened

regardless of whether it has little or no use. You will discard it when the indicator window shows it is no longer effective and this is independent of the length of time the canister has been in use although related directly to the type of use.

There has been a strong difference of opinion for many years as to whether the seal should be replaced on the bottom of the canister after each use when the unexpended canister and mask are put back in the carrying case. One point of view is that, if the seal is always off, the canister is ready for instant use, thus eliminating the chance of a man forgetting to remove the seal and discovering that he can't breathe through the canister. However, several years of scientifically conducted tests have proved conclusively that replacement of the seal on the bottom of the canister extends the service life of the canister sufficiently that economics dictate its replacement. This is particularly true since a new plastic backed airtight tape is being used for this bottom seal.

These masks are to be used only in places where there is ample oxygen in the air. They will remove contaminants but will provide no oxygen in addition to that in the inhaled air. Therefore, where there is a deficiency of oxygen or a concentration of toxic gases in excess of two per cent, other than ammonia which is three per cent, a self-contained breathing apparatus is required.

Basically there are three types of self-contained breathing apparatus which might be used, all of which permit breathing independent of the surrounding atmosphere. One type uses the oxygen cylinder rebreathing principle, in which there is a cylinder of compressed oxygen, a breathing bag, necessary regu ating valves and a chamber with a chemical for removing carbon dioxide from the exhaled breath. This type of apparatus has been manufactured in a thirty minute, one hour, and two hour form. The two hour type is used almost exclusively for mine rescue work.

A second kind of self-contained breathing apparatus, which is currently used widely by the fire service, is the self-generating type. It is somewhat similar to the oxygen cylinder rebreathing type. It uses the rebreathing principle in which the exhaled oxygen is reused after removal of the simultaneously exhaled carbon dioxide. It features a canister containing potassium superoxide which, when contacted by the exhaled breath, produces all the oxygen necessary for inhalation under hard work and simultaneously removes the exhaled carbon dioxide. This type of apparatus is both simple to use and to maintain. It is rated at 45 minutes under hard work.

A third type of breathing apparatus is known as the demand type and is available in a number of different forms. All have a high pressure cylinder of compressed air or oxygen, a demand valve which permits flow in exact accordance with breathing needs during inhalation, and a means of exhaling to the surrounding atmosphere. The basic difference between this type of apparatus and the first two is that the exhaled breath is vented to the atmosphere rather than being rebreathed after removal of the exhaled carbon dioxide.

The only approval agency which actually tests self-contained breathing apparatus for permissibility on a national scale is the Bureau of Mines, U. S. Department of the Interior. The Approval Schedule for such testing is Schedule 13 and it covers four classes of approval: A (30 minutes); B (45 minutes); C (one hour); and D (two hours). We will first consider equipment of the demand type which is approved by the Bureau of Mines. Obviously, since the shortest period for which an approval is issued is thirty minutes, this apparatus must be a thirty minute type. These units weigh approximately thirty pounds and have available about 40.3 cubic feet of free air or oxygen when filled to a pressure of 1,980 pounds per square inch.

I feel it would be profitable to spend several minutes discussing how service life of a self-contained breathing apparatus is determined as there exists some area of misunderstanding on this point. The only accurate way to determine service life is to use a reproducible type of testing so that one apparatus can be compared with another and the results have validity. Under Approval Schedule 13 of the Bureau of Mines, a "reproducible man test" is used in which the person wearing the apparatus works for various periods at controlled levels from almost a resting state to maximum exertion. This ranges from walking to pulling heavy weights and is, for the most part, quite physically exacting completely independent of whether breathing apparatus is worn or not.

Another type of testing, also reproducible, is a "steady state test" in which there are no peaks, but a steady stepping up and down at a rate of thirty times a minute on a box 8½ inches high. This does not sound severe, but actually is the equivalent in total work to the procedure used by the Bureau of Mines except that it never puts severe stress on the man or apparatus. This steady state type of test, which was used widely

This boy, overcome in a basement fire, was carried out of noxious area by fire captain wearing self-generating type mask. Canister, containing potassium superoxide, produces oxygen and removes exhaled carbon dioxide.

All service mask is useful in these conditions when there is ample supply of oxygen in surrounding atmosphere.

by the Department of the Navy at one time and is still used as a check test on the Bureau of Mines procedures, does not seem to me to be as realistic a type of test as the other since in use of self-contained breathing apparatus peak loads are normally applied.

Some authorities argue that neither method is as satisfactory as testing by mechanical breathing machines, since such machines eliminate the human element which must, to some extent, vary in performance.

In demand type apparatus, air or oxygen is drawn from a high pressure cylinder at a rate which can be calculated readily if we use the results of Bureau of Mines tests. A thirty-minute apparatus uses a cylinder with a nominal 40 cubic feet of free air or, by multiplying by 28.3 (the number of liters in a cubic foot), 1,132 liters. Then by dividing by 30 we find that 37.74 liters are consumed per minute, so for practical purposes let's call it 38 liters per minute consumption. This is what the physiologist calls minute volume of respiration or simply the amount of air breathed per breath multiplied by the number of breaths taken per minute. However, this is not the rate of flow which must take place to provide all the air one needs during inhalation. The general rule of thumb is to multiply the minute volume by three to determine the rate at which the air must flow to satisfy the user without his feeling that he is "starved" for air. Actually, since we know that the user will have even greater peaks, as when he is gasping most deeply under maximum exertion, the regulator must have the capacity to deliver perhaps as much as 200 liters a minute *rate of flow* although the actual amount of air consumed is much less. The highest recorded minute volumes for sustained effort are approximately 50 liters per minute and have been observed in Maine wood choppers and at such work levels they would exhaust a thirty-minute rated apparatus in twenty minutes. However, 38 liters a minute consumption of air is a realistic figure which I regard as having a practical safety factor. This means that the service life of a demand apparatus

Fire fighters wearing demand type breathing equipment attempt to enter smoky area for search and possible rescue.

can be calculated easily by dividing the volume of the cylinder by the minute volume.

In rebreathing systems the situation is somewhat different as the body metabolism rather than pulmonary ventilation alone is a factor, but this is complex and beyond the scope of this immediate discussion. The same test procedures are used, however, for all self-contained breathing apparatus so that the rated service life is derived from comparable reproducible methods.

Spacing Fire Alarm Response

(*Continued from page 37*)

station was provided and the surrounding counties (polylitics) began systems of their own.

"From this point on, things developed quickly until now, ten years after Chief Spanner's original idea, all any person on this planet has to do is pick up his phone and dial a planet-wide emergency number. Upon doing this he automatically gets his local county emergency alarm office. Or he may wish to pull any one of the county alarm boxes conveniently located every 300 feet throughout the built-up part of the county and within 300 feet of any building that is occupied outside that area. Each county radio system not only contacts the local emergency services, but also has a special intercommunicating frequency for coordination with other county alarm offices. Direct telephone lines connect each county alarm office with the other adjoining ones. There is a county-wide off-duty personnel recall system. Even areas near the county lines have been re-evaluated and inter-county response planned so that the original theory of trained men, with enough equipment in the shortest possible time is now a reality for all of Planet No. 1896."

Memo to:

ALL FIRE CHIEFS

We want you to give particular attention to the following article. We hope, of course, that you will read this special issue of FIREMEN from cover to cover but we consider this article on lumber yard fires of special significance. Think for a few minutes about how much it would mean to your men if they could get this informative magazine each month of the year.

FIREMEN magazine is prepared especially for the interests of fire fighters, although many engineers and other technical specialists subscribe to it regularly. You can get this popular monthly magazine simply by taking membership in the National Fire Protection Association for yourself or your fire department.

If you do so, and you are the chief of a paid, call or volunteer municipal fire department, you can order four (4) yearly subscriptions at no extra charge. Extra subscriptions cost only $2.00 each per year. Membership dues in this Association are only $15 per year and you will receive a beautiful membership certificate that you will be proud to display in your headquarters, plus subscriptions to the NFPA *Quarterly* and the monthly *Fire News*. You will also get other NFPA materials such as Spring Clean-Up and Fire Prevention posters, folders and suggested news, radio and TV releases.

Primarily, though, the membership will serve the officers and men of your fire department. NFPA publications can serve a useful purpose in every fire station library. They will stimulate the interests of your men in better methods of fire combat, in thorough training, and in sound principles of fire department operation and administration. And remember, all of your fire fighters can subscribe to FIREMEN magazine when you start or renew membership in this Association.

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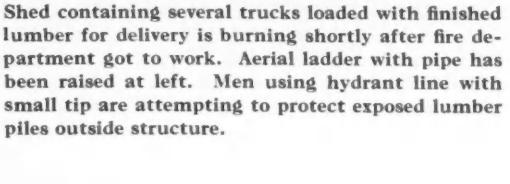
LUMBER R

Shed containing several trucks loaded with finished lumber for delivery is burning shortly after fire department got to work. Aerial ladder with pipe has been raised at left. Men using hydrant line with small tip are attempting to protect exposed lumber piles outside structure.



Walls of finished lumber shed beginning to burn away but exposed piles of lumber adjacent to shed are not yet burning. Brisk wind is fanning flames. Note dry grass and weeds.

With walls gone, outside lumber begins to burn. Metal covering of a lumber shed on the down-wind side saved its contents and protected oil company property beyond. Flying sparks ignited grass in neighborhood, requiring fast action by a patrol of fire fighters.

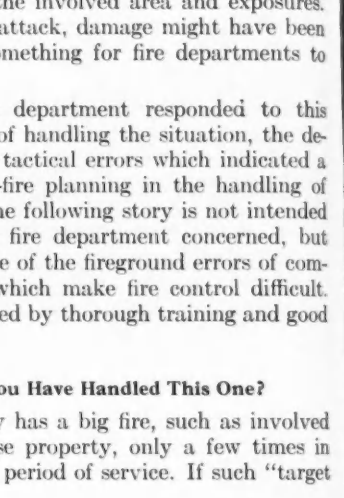
THE sequence of pictures shown on the cover and these pages typifies the fires that involve retail lumber yards. This one was started by boys playing with matches in a shed. They ran to give the alarm that summoned the local fire department but before final extinguishment was completed, about $150,000 worth of lumber and property was destroyed. Under different conditions, damage could have been greater, but the chief factor limiting the spread of this fire was the spacing between the involved area and exposures. Yet, with proper fire attack, damage might have been less — and this is something for fire departments to consider.

A paid-on-call fire department responded to this blaze. In the course of handling the situation, the department made some tactical errors which indicated a lack of adequate pre-fire planning in the handling of lumber yard fires. The following story is not intended as a criticism of the fire department concerned, but simply highlights some of the fireground errors of commission or omission which make fire control difficult. These can be eliminated by thorough training and good officer leadership.

How Would You Have Handled This One?

A small community has a big fire, such as involved this lumber warehouse property, only a few times in the average fireman's period of service. If such "target

(Right) Note feeble stream from ladder pipe. Supplied by two hydrant lines siamesed into the 3-in. hose the ladder pipe gave ineffective trickle throughout the fire. The pump on the ladder truck which could have boosted pressure to provide a good stream was not used. Of four pumpers at the fire only one was used and that belatedly. Most hose lines were operated at hydrant pressure and were relatively long.



RD FIRES

hazards" have been pre-planned so that pumps and equipment can be used to best advantage, a well-equipped and well-trained fire department can do an outstanding job. Generally, neighboring departments are also available and can be called to help protect exposed property.

The cover picture shows this large fire in a community where the citizens thought they had furnished good fire protection by providing three pumping engines and an aerial ladder truck (which also had a pump). Your editor chanced to be in this Massachusetts town on a Sunday when the fire occurred and took the pictures which pretty well tell the story.

A fire such as this could happen in almost any community at any time. The following incidents show that the fire attack could have had better coordination and effectiveness. Note how the fundamental violations of good fire fighting techniques each detract from the fire department's potential for controlling this fire. How do you think your fire department would have handled it?

1. There was an 8-in. main in front of the property with four hydrants within effective distance. Lines from three hydrants were used but only one of the four pumpers at the fire was hooked up to a hydrant and that was done belatedly.

2. When this pumper was hooked to the hydrant, the men had trouble operating the pumper and reported over the radio they thought it was out of gas (but it was not). Several hydrant lines protecting lumber piles were shut down while the pumper was being hooked up.

3. A big new pumper capable of 1,000 gpm from the 8-in. main was used only to lay hose and to supply a booster line in a futile effort to extinguish flames in lumber piles. It should have been connected to the hydrant across the street on the 8-in. main from which the pumper could supply three 2½-in. lines.

4. The ladder pipe on the new aerial ladder was placed in service fed by two hydrant lines. It was totally ineffective. Had the pump on the aerial been used to supply this pipe, this stream could have knocked down the heat from the entire body of fire and prevented damage to all exposed lumber outside the burning shed. The fire would have been under control at least a half hour sooner.

5. The fire was only a couple of blocks from the limits of a large city which could have provided heavy stream equipment in short order. No outside help was called, despite the fact that the entire neighborhood was threatened by flying brands. Instead, one of the engines that should have been pumping was sent later to cover exposures.

6. The flying brands jumped a railroad track at the rear, set fire to high brush and threatened a residential area. When neighbors asked what to do, a visiting firemen gave them pump

Small solid stream was not able to prevent spread of fire to lumber piles at right. Usually, lumber yard fires are intense and require good application of water fog and well-directed heavy stream appliances.

Corner of shed still standing but exposed lumber is ignited. Even in a small yard like this, the dollar value of lumber can be considerable. Adequate spacing between piles and building makes the fire control problem easier.

Fire slowly eating through piles of stacked lumber late in fire due to failure to provide proper streams for covering exposures. A 2½-in. hydrant line proved ineffective, but a good fog stream would have knocked this down.

tanks to control the brush fire. A short time later they were told to put them back, that the fire department did not want help.

7. There was no effective command operation. The chief was wandering around in civilian clothes without a hat. No one knew where to find him and even the property owners could not identify him. The deputy chief apparently did not show up for over an hour. There appeared to be no experienced paid fire fighters and no regularly assigned apparatus or pump operators. The call firemen were game and willing but largely hamstrung by inept leadership. They were not allowed to advance the lines without specific orders. When one man suggested use of 1½-in. lines to maneuver between the lumber piles for mopping up (which would have been ideal and would have been used at that stage by any experienced department) he was told that the fire was too big for 1½-in. hose streams. Actually, good 1½-in. streams would have put the feeble 2½-in. streams to shame.

8. Early in the fire a pumper was laying out. It ran out of hose in front of the fire and was short three or four lengths. Another pumper within 50 feet had plenty of hose. No attempt was made to piece the line for some time until the chief happened by and ordered it done. At one time a line from the pumper was ordered shut down and moved. The pipe was closed too fast and the line burst.

9. This was an ideal situation for using heavy stream fog on the main fire and for hand lines to protect exposures. Fog nozzles are particularly effective on a fire of this nature not only for better heat absorption and exposure protection but because these nozzles can be adjusted to make best use of the flow available at each nozzle without changing tips. The streams can be quickly adjusted to provide both reach and wide angle coverage as needed.

Early in the fire the chief was offered the use of two of the latest type of 2½-in. fog nozzles of a type used in the largest city in the state and which were on the fire ground but he ignored the offer, apparently preferring ¾-in. tips on direct hydrant lines. At no time was much over 500 gpm applied to this fire although at least 1,500 gpm could have been applied by use of the pumpers with proper nozzles.

What Can a Fire Department Do?

The fundamental mistakes outlined above can happen at any fire. The number and frequency of such mistakes can be cut down through progressive officer leadership, a sound training program and a thorough pre-planned study of major occupancies where big fires are apt to occur. Lumber yards certainly fall into this latter category because they present large amounts of combustible material in large open areas, all too often exposed to winds of high intensity. Sometimes when lumber yard fires get a good start, they grow completely beyond the extinguishing capacity of responding fire departments and the only practical use of equipment is in the protection of exposed properties. Here are some elements that fire departments should consider in pre-planning for lumber yard fires.

What is direction of prevailing wind?

How does the piling and storage of lumber compare with the recommendations in NFPA Standard No. 47, *Retail Lumber Yards*?

What water supply is available? (The capacities of hydrants in the area can be measured by flow tests conducted by the fire department, if the local water department or insurance rating organization does not have this hydraulic data. If only static water sources are available, pre-planning should include consideration of (1) access to the water source (2) how drafting is to be accomplished and (3) possible relay operations.)

Will every piece of available apparatus be moved to effective position and utilized to its full capacity?

Will heavy stream equipment be placed in the most advantageous positions and supplied with adequate flows and pressures to bring about the best results?

Will a mutual aid plan be necessary?

If so, how prompt will be the response of other fire departments and what apparatus and equipment can be expected?

What action will be necessary to control fires started by flying sparks and brands? Will fire fighters have definite assignment for patrolling for such fires? Will the job be handled by companies responding on mutual aid?

Occupancy Fire Record FR56–5, prepared by the NFPA Fire Record Department, has some significant information pertaining to fires in retail lumber yards. In this illustrated study, it was reported that in one hundred retail lumber yard fires, lightning, defective electric wiring and equipment, defective heating equipment, exposure fires and set fires were the five leading causes. Of the hundred incidents studied, 55 fires had their start in lumber storage sheds, 27 started in yard storage areas, and 18 started in miscellaneous yard buildings.

In the most recent NFPA study "Fires and Fire Losses Classified," it was reported that 1,600 fires involved lumber and coal yards for that year with a monetary loss of $19,063,000.

Because of severe fire losses in the past, those who operate retail and wholesale lumber yards generally appreciate the need for good fire protection. The modern lumber yard frequently is asphalt paved, well-fenced and supervised by a watchman or by automatic fire detection, alarm and suppression equipment. Combustible weeds and brush are eradicated throughout the lumber storage area, and kept at a safe distance from the yard by weed killing chemicals, by cutting, or by some other method of keeping a protective strip around the exterior of the yard. Lumber is piled to a maximum height of twenty feet, and the piles are arranged so that prevailing winds will cause the least threat to exposures if fire starts.

It is in the pre-planning size-up of lumber yard layouts that fire departments can gain a wealth of information. The chief and other fire officers must give consideration to how fire fighters will have to move through the alleys between piles (in advancing or retreating) if severe fire develops. The stability of the piles, the combustibility of the various sizes and types of lumber, the threat to buildings in the yard and those outside but liable to be exposed to fire — all these merit thoughtful study by fire department members.

The placement and use of heavy stream equipment is also vital to a successful fire attack. As mentioned before, a decision must be made on the effectiveness of attack with water fog or straight stream equipment, but generally this decision must be made on the fireground. Nevertheless, the major planning of good fire attack, the placement of apparatus and hose streams, the utilization of water supply and mutual aid — all these are factors on which a fire chief can act positively, long before a lumber yard fire occurs.

THERE HAS BEEN . . .

. . . a demand for additional copies of this article on lumber yard fires. In anticipation of this demand the article was pre-printed and a limited supply of these pre-prints is available at 25 cents each with discounts for quantity purchases. Write to the NFPA Publications Department.

CHANGES IN NFPA STANDARDS

EACH year a number of the technical standards published by the National Fire Protection Association are revised by appropriate NFPA committees. The revised standards are presented for adoption during an NFPA Annual Meeting and, when adopted, are published. This year in the meeting held at Atlantic City, a total of 62 standards were adopted including three tentative standards.

A great many members of the fire service including fire chiefs, fire marshals and others make it a point to keep these separate standards in their offices or libraries for ready reference. Of course, all NFPA standards are published each year in a six-volume set of the National Fire Codes and, because of this, many individuals and organizations simply order a complete set of the codes when they are published in September each year.

In the list at right, fire department members might be particularly interested in ten of the revised publications. Standard No. 191, for example, has some completely new specifications for portable pumping units for fire department service. For some years this standard specified only one type of portable pump; now, five different classifications of pumps have been declared acceptable for the fire service.

New recommendations on aluminum ground ladders have been added to Standard No. 193 which covers the care and testing of ground and aerial ladders. Standard No. 194 has a complete new section showing where national standard fire hose coupling screw threads should be used on fire department nozzles, heavy stream devices, hose outlets and supply connections of fire department pumpers.

Fire prevention bureau personnel should be interested in the new recommendations in Standards No. 30 — Flammable Liquids Code, No. 329M covering the leakage of underground tanks and No. 58 — LP-Gas Storage and Handling. Certainly the new edition of Standard No. 101, the Building Exits Code, warrants close attention.

Also of interest to fire service members should be Standards No. 403, No. 412 and the Recommended Good Practice for Community Dumps, outlined in No. 602.

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Salvage Work By Fire Departments

(*Continued from page 33*)

"Salvage work is done by firemen that are not needed in fighting the fire." — CHIEF L. F. MCDONALD, JACKSON, MISS.

"More salvage could be done if covers were spread sooner, even before the fire is under control." — CHIEF GEORGE A. WALLS, Paterson, N. J.

"It does create a manpower shortage at times, but if manpower is used to its fullest it is not serious. Salvage work in the Buffalo Fire Department is standard basic fire fighting lesson." — COMMISSIONER WILLIAM M. DALY, BUFFALO, N. Y.

Who does it?

Where there are no separate salvage companies other fire companies perform salvage work, as indicated by the following comments:

"Salvage work is considered a very important part of the fire fighter's job, and regular schooling is held on all phases of salvage work. Ladder and squad companies spread tarps as soon as possible after arrival." — CHIEF M. J. KENNOY, LANSING, MICH.

"Salvage work is performed principally by ladder company personnel. It is felt that salvage work is an integral part of departmental operations." — CHIEF DONALD S. CHARLES, CHARLOTTE, N. C.

"Salvage work performed in conjunction with normal ladder truck duties. When necessary all personnel assist." — CHIEF G. F. VERNOTSKY, AKRON, OHIO

"Speaking from many years' experience in salvage work, there is no doubt that men assigned to salvage operations particularly, will prevent many thousands of dollars damage. Firemen assigned this as an incidental duty face a manpower shortage in fire companies. Payrolls, which mean cost of personnel, are the biggest drain on the fire department budget and for this reason firemen are required to perform double duty (salvage work and fire fighting), not to mention rescue work and ambulance duty." — CHIEF ROY CONNER, KNOXVILLE, TENN.

Importance of Salvage

A number of other chiefs commented upon the importance they attach to salvage work by their departments:

"I definitely feel that the work of furnishing and spreading covers at fires is a vital part of fire department work and keeps the fire loss down to a great degree. Getting sprinkler heads back in and restoring sprinkler protection quickly is also good practice and I consider it a phase of our work." — CHIEF MILTON C. ANDREWS, NEW BEDFORD, MASS.

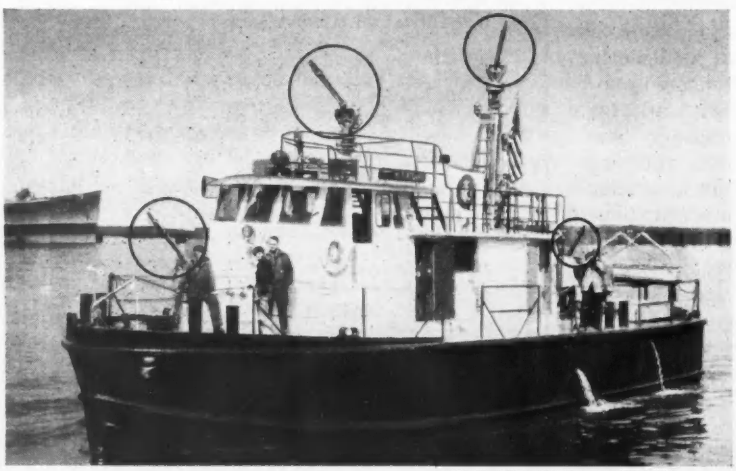
"We have no suggestions except to relate that we believe in salvage operations and treat it as a required operation at all fires where salvage of articles will prevent greater losses. Furthermore, we believe that all progressive fire departments carry out salvaging operations as a routine." — CHIEF GEORGE A. WEIGAND, TRENTON, N. J.

"At the time my department went into salvage work, the loss per capita was $1.25. The following year, 1954, the year after salvage operations were put into effect, the per capita loss dropped to 47½ cents." — CHIEF W. A. WESTERFELD, ALBUQUERQUE, N. M.

"The fire loss has been cut considerably through salvage operations." — CHIEF ROBERT M. HOUSEAL, HARRISBURG, PA.

"Salvage is an important part of fire department work, reduces fire losses by protecting and reclaiming property during and after fires." — CHIEF W. A. DUNHAM, SPOKANE, WASH.

NEW "City of Portland" FIREBOAT



CHOOSES "INVINCIBLE" MONITOR NOZZLES

"WE AGAIN CHOSE 'INVINCIBLE' MONITOR NOZZLES MADE BY McINTIRE BRASS WORKS FOR OUR NEW FIREBOAT BECAUSE OF THEIR PROVEN RUGGEDNESS, PERFORMANCE AND ABILITY TO DELIVER LARGE AMOUNTS OF WATER WHEN AND WHERE WE NEED IT" — says Chief Carl P. Johnson, Portland, Maine.

Look for us at booth No. 65, I.A.F.C., Grand Rapids, Michigan

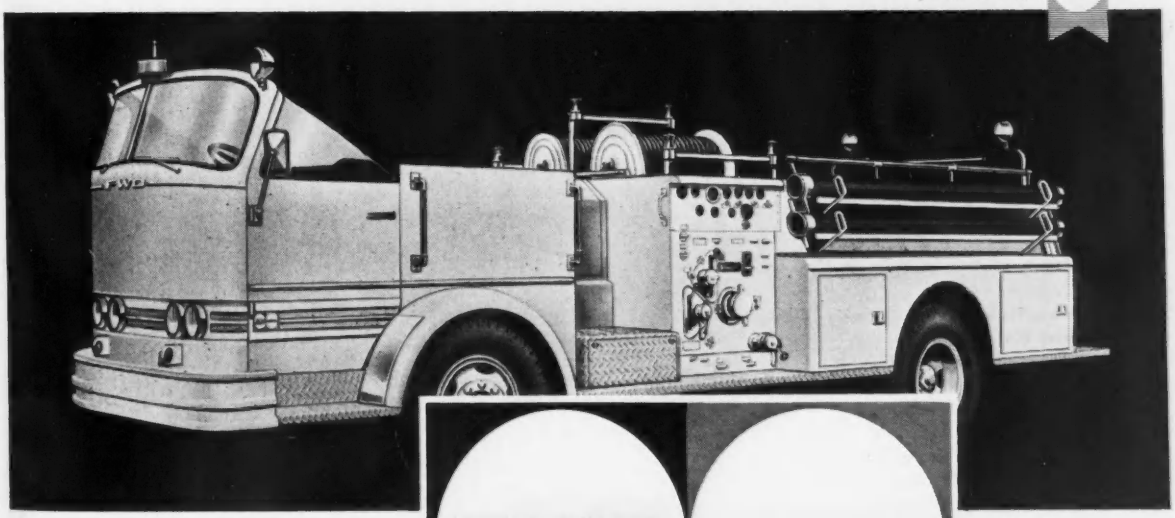
F. N. McINTIRE BRASS WORKS, INC. 377 PUTNAM AVENUE CAMBRIDGE 39, MASS.

NEW FWD GOLDEN FIRE LINE

FWD is celebrating its "50 years of vehicle ideas" with a completely new fire apparatus line—the Golden Fire Line. Completely new engineering and the finest new styling. It's an "idea" line . . . the best protection any community can have!

New rear drive models bring famous FWD protection to any department, regardless of budget. FWD's proven *four* wheel drive control is also available for those who want the finest in safety and guaranteed "get-there" traction. New junior aerials are now available on all FWD pumper chassis—in addition to FWD-Geesink aerials. New cab-forward styling is the most modern in the industry. In all, the FWD Golden Fire Line has 34 pumpers—500, 750, 1000 and 1250 G.P.M.—and 16 aerials. Write for "specs" now!

50 years of vehicle ideas FWD



Builders of America's finest and safest fire apparatus.

FWD CORPORATION

CLINTONVILLE, WISCONSIN

CANADIAN FACTORY • KITCHENER, ONTARIO

AN IMPORTANT CHANGE IN

FIRE HOSE COUPLING DESIGN

AN INTERESTING and significant design for attaching couplings to 1½-in. and 2½-in. fire hose has been accomplished by Bar-Way Manufacturing Company of Stamford, Connecticut. The new couplings are similar to the Bar-Way couplings for booster hose. During the past year the company has been introducing the couplings to the fire service in various sections of the United States. It has a number of features which should be of interest to fire chiefs, master mechanics and others responsible for buying fire department equipment.

As illustrated on next page, the coupling consists of five component parts: a male bowl, female bowl, male expander, female expander and swivel nut, and a face gasket. The male and female bowls are provided internally with a basic tailpiece diameter to accommodate a given size hose. Several tapered serrations grip and seal the hose when it is assembled with the threaded expanders. The expanders have a double lead round thread which will allow compression and sealing without harmful effects to the hose lining. The Higbee cut is provided on all coupling threads unless otherwise specified.

Butt gaskets and expansion rings are not needed for this coupling since the expander provides a positive, tapered, sealing surface which secures the hose into the bowl. The only gasket required in each assembled coupling is located within the swivel nut recess.

Another feature of the new coupling is that the orifice allows for full flow since there is no significant reduction of internal diameter or a projection to block the flow of water. Weight of the streamlined coupling is comparable to the weight of the normal expansion ring type of coupling.

The two-piece construction of the bowl and threaded expander permits inexpensive, simple standardization of threads and any thread combination can be attained simply by replacing the expanders. The new coupling is also designed so that it can be used in combination with other couplings.

Elimination of expansion rings should reduce the problem of damage to couplings from metal fatigue or damage caused by re-expanding or overexpanding of coupling bowls.

Attachment of the coupling to

More for your Money...in MORYSVILLE

F-119 EMERGENCY BODY

- Booster Reel
- Water Tank
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- Chrome Plated Railings
- Full Length Seats
- Available in any CA. (Shown 60" CA)
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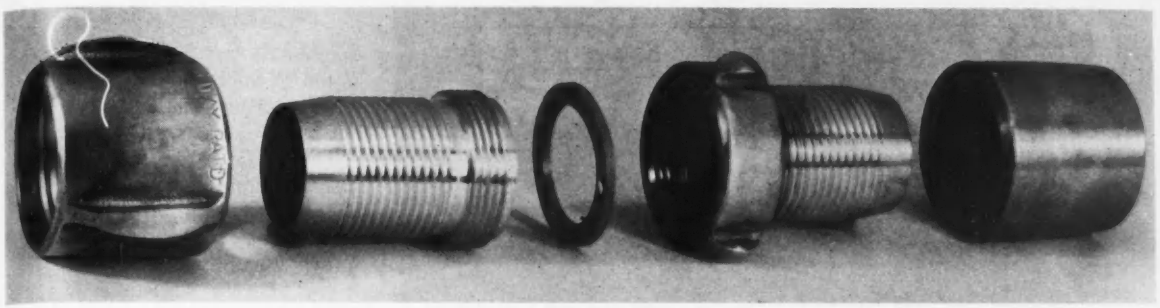
DISTRIBUTORS IN PRINCIPAL CITIES

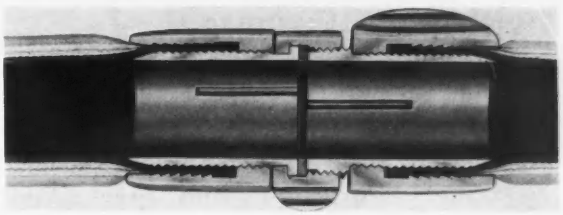
Also a complete line of compact and versatile Fire, Fire-Crash, Rescue and Emergency Units and Special Built Fire Bodies. Finest materials and workmanship, extra-rugged construction and original modern design. Compartments arranged for handy stowage of fire fighting, first aid and life saving equipment, helmets, rain gear, tools, tanks, portable pumps and generators, etc.

Write for FREE Literature



Five basic parts of coupling are (left to right) male bowl or shell, male expander, face gasket, female expander and female bowl or shell.

hose is relatively simple. All that is required is a special key which fits into the slots of the expander, a set of clamps to fit into vise jaws and hold the shell in place for entry of the expander, and a ratchet wrench (reversible) which fits onto the end of the key. In assembling a coupling on a hose, the hose is first pushed into the shell until it seats, then the clamps are placed around the shell and hose and fastened securely in a vise. The expander is placed on the key which acts as a lead for the expander as the latter is screwed into the shell until it seats.

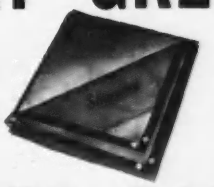


(Right) Cross-sectional view of coupling fastened on hose. Note how serrations of expanders grip hose in shell.

The new coupling, which has been listed by Underwriters' Laboratories, has been tested with cotton, synthetic and rubber single- and double-jacketed hose up to, and including, a 1,400 psi hydrostatic test. It has been tested on various types of hose and has withstood a tensile pull ranging from 2,400 to 4,900 pounds. Present available couplings range from 1- to 2½-in. size with rocker or forestry lugs, with finish and thread specifications to suit re-

(*Continued on page 52*)

FULTON SHUREDRY® GREEN-BAK SALVAGE COVERS ELIMINATE SMOKE AND WATER DAMAGE



Easy-to-handle Shuredry Salvage Covers are made from the finest quality treated cotton duck, pressure impregnated by Fulton's exclusive "dry-treatment!" All seams are waterproofed. Light and pliable. For complete satisfaction, *specify SHUREDRY.* Fulton Nylon Salvage Covers also available.

SHUREDRY GREEN-BAK COVERS will pass the tests specified by the National Board of Fire Underwriters. They also carry the approved symbol of the Associated Factory Mutual Fire Insurance Companies.

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Get smoke out, get air in

with Multi-Purpose

SUPER VAC

CONTROLLED VENTILATION UNITS

NOT JUST A FAN ... but a powerful vacuum-action air screw ... Super Vac is amazingly simple in operation, made possible by the efficient design of the **powerful propeller** that is the heart of the unit. This patented propeller produces 100% pulling or blowing power over its entire surface.

Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation** ... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action ... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units ... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

★ **Highly portable ... operates in any position**
★ **Design permits vertical stacking**
★ **Made in 16" and 24" sizes**
★ **AC or DC, regular or explosion-proof motors**
★ **Choice of red or white baked enamel finish**
★ **Running board mounts available**

For complete details and specifications on

... contact your fire equipment dealer

... or write manufacturer

SUPER VACUUM

SUPER VACUUM MANUFACTURING CO., Inc
319½ East Seventeenth Ave., Denver 3, Colorado

(*Continued from page 51*)

quirements. It has been used and tested to the burst pressure of various types of synthetic fire hose without harmful effects to the coupling.

The Bar-Way coupling was originally developed to meet the requirements of the Bartlett Tree Company which used high pressure spray. For that use, a coupling had to be able to withstand working pressures up to 1,000 pounds, take considerable pulling under pressure, be streamlined for slipping through underbrush and over obstacles and be easily interchanged in the event of hose failure. After development of couplings to meet those requirements, the company then concentrated on producing couplings that would meet the equally strict demands of the fire service.

New MSFA Officers

RALPH SMALL of Boulevard Heights was elected president of the Maryland State Firemen's Association in June during the Association's 67th annual convention. He succeeds Howard B. Springer of Havre de Grace.

Others elected were Jack Reckner, Earligh Heights, first vice president; Howard Keller, Pikesville, second vice president; Floyd Heimer, Branchville, secretary; Bill Wilson, Midland, treasurer; and Rev. James W. Minter, Baltimore, chaplain.

"Fire Is a Job Robber"

A COLORFUL new folder recently published by the National Fire Protection Association warns industrial workers how fire can close plants and cut paydays. "Fire Is a Job Robber" describes 11 ways to make jobs and plants fire-safe, from smoking only in permitted areas and getting rid of trash to piling stock correctly and refueling industrial trucks outdoors or in special service areas. This folder is particularly valuable to employees of industrial establishments.

Copies of the new folder are available by writing to the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Mass.

Large Loss Fires of 1958

DEVASTATING major fires struck American property at the rate of almost one a day during the past year, according to the NFPA Fire Record Department.

Almost 295 million dollars' worth of buildings, industrial installations, forests and other property in the United States and Canada was wiped out by 356 "large loss" fires in 1958.

On 64 occasions, property worth one million dollars or more was destroyed.

However, as reported in the April issue of FIREMEN magazine, large loss fires in 1958 — those with individual losses of a quarter million dollars or more — were not as numerous as in the previous year.

The 1957 record, with 422 fires costing almost 350 million dollars, was the worst in history in terms of dollar losses.

While the 356 major fires included in the 1958 report represent less than one per cent of all fires during the year, they were responsible for approximately 20 per cent of the entire annual dollar loss from fire.

According to estimates reported earlier by NFPA, devastation by fires of all sizes in 1958 came to a record-shattering total of one billion, 305 million dollars in the United States, and 180 million dollars in Canada. Fire deaths exceeded 12,000, all but 620 of them occurring in the United States.

Of the 291 fires involving buildings, refineries and outdoor industrial facilities, 261 occurred in the United States and 30 in Canada.

Industry made the greatest stride in reducing losses from major fires. The number of industrial plants involved dropped from 125 in 1957 to 85 in the past year, with a reduction of almost $42,500,000 in dollar cost. The 1958 loss was $52,260,000.

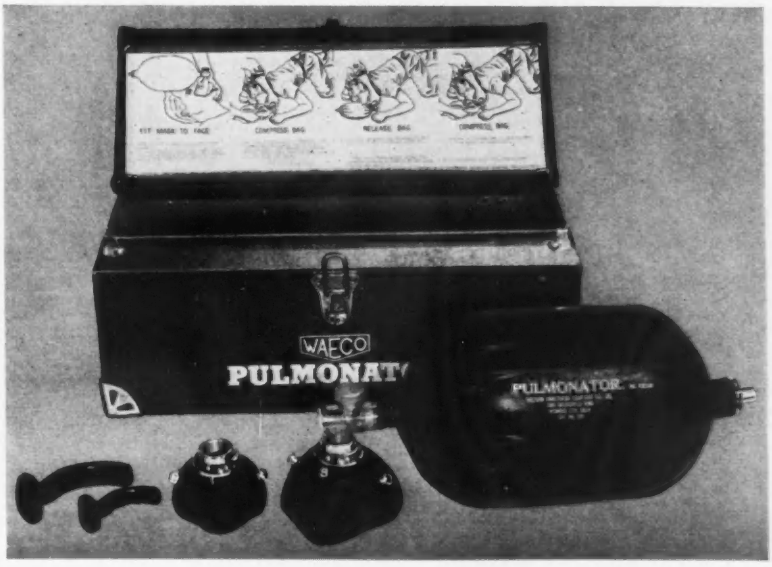
Percentagewise, the largest drop was a 73 per cent reduction in major church fires — from 15 the previous year to 4 during 1958. Major school and college fires were down also, to a total of 17 with losses of about six and one-half million dollars, a reduction of approximately 900 thousand dollars from the previous year. There were no fatalities in these fires. The

(*Continued on page 55*)

RESUSCITATION

AS NEAR AS

YOUR FIRST COMPANY IN



PULMONATOR

SAFE ~ SIMPLE ~ SURE

A simple, lightweight (less than 1 lb.) but effective respirator which permits the operator to inflate intermittently and rhythmically the lungs of a person who has ceased to breathe.

A gentle manual squeeze of the Pulmonator bag will expand the victim's lungs. Release of the hand permits exhalation to take place and, at the same time, the elastic recoil of the bag causes it to refill with fresh air. An oxygen nipple provides easy attachment to an oxygen tank for the occasional patient who benefits from an oxygen enriched atmosphere.

PACKAGED FOR FIRE AND RESCUE SERVICE IN A DURABLE, METAL BOUND FIBER CASE, COMPLETE WITH AIRWAYS AND MASKS, ONE EACH, IN ADULT AND CHILD SIZES. No. 525-F PULMONATOR, as illustrated . . $75.00

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Please send more information on Model 525-F Pulmonator.

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SAFEGUARDS ITS PROPERTY WITH ADT *Automatic* PROTECTION

Selected by FACTORY magazine as one of the nation's Top Ten for 1959, the new Cutler-Hammer low-voltage distribution apparatus plant is a model of clean building lines and uncluttered working space—with plenty of growing room.

Automatic operations within the 300,000 square-foot plant are used wherever possible, even to safeguards against fire and intrusion.

ADT Sprinkler Supervisory and Waterflow Alarm Service maintains a continuous, automatic check on water supply to the sprinklers and will automatically summon fire fighters in case of fire. In unsprinklered plant areas, ADT Aero Automatic Fire Alarm Service will automatically detect and report a fire in those vital first few minutes. Failure of Cutler-Hammer watchmen to signal while on patrol will result in prompt investigation.

ADT SERVICE CAN HELP YOU, TOO...

Whether your project is old or new, sprinklered or unsprinklered, there is an appropriate ADT Automatic Protection Service to meet every requirement. An ADT specialist will show you how combinations of *automatic* services can safeguard property, profits, and employees' jobs, at lower cost than other, less effective methods. Call the ADT sales office listed in your phone book; or write to our Executive Office.

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Executive Office: 155 Sixth Avenue, New York 13, N. Y.

A NATIONWIDE ORGANIZATION

ADT

Large Loss Fires of 1958

(*Continued from page 53*)

record did not include the Chicago school fire of last December, since property loss there was under 250 thousand dollars.

Sharply counter to this trend was a rise in major store fires. Losses were up more than 11 million dollars to a total in excess of 37 million dollars and the number rose from 58 in 1957 to 81 last year.

According to the NFPA analysis, both construction weaknesses and absence of protective sprinkler and alarm systems were mainly the reasons why minor fires got out of hand and became major losses.

Automatic sprinkler protection would have prevented 239 of the 286 large loss building fires. In 151 cases discovery and fire department notification were delayed because there were no sprinklers, alarm systems or watchmen.

Structural weaknesses, ignoring fire safety standards, included missing division walls, unenclosed stairwells and elevator shafts. These were major factors in allowing fire to spread throughout the building instead of confining it near the area of origin.

Fire Marshals Association

AT ITS annual meeting in June, the Fire Marshals' Section by constitutional amendment readopted its original name, Fire Marshals Association of North America, after a period of 32 years. This group continues, however, as a section of the NFPA, and no organizational changes are contemplated.

Georgia State Fire Marshal F. E. Robinson was elected president of this Section, together with Vice Presidents R. M. Hill, Los Angeles Fire Marshal, and Ed. J. Herron, State Fire Marshal of Iowa. Fire Marshal W. L. Heaton of Austin, Texas, was elected secretary. Continuing as executive secretary is NFPA Assistant General Manager Charles Morgan. Elected to the Executive Committee of the Fire Marshals Association were William J. Eckles, Philadelphia; Dale F. Gilman, Portland, Oregon; Aaron Rosenfeld, Birmingham; Francis J. Ryan, Newfoundland; and Carroll E. Shaw, Connecticut.

CAIRNS HELMETS

THE FIREMAN'S FIRST LINE OF DEFENSE

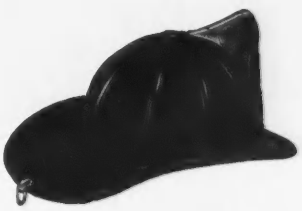
FOR MORE THAN A HUNDRED YEARS

LEATHER, ALUMINUM AND PLASTIC

REGULATION AND DROP BRIM MODELS

No. 5A — "NEW YORKER"
(Leather)

No. 350 — "SENATOR"
(Aluminum)



No. 900 — "CLIFTON"
(Flint-Flex Plastic)

No. 550 — "SEAMLESS"
(Leather)

No. 710 — "STREAMLINER"
(Aluminum)

PRICES TO SUIT ALL BUDGETS

14 STYLES TO CHOOSE FROM

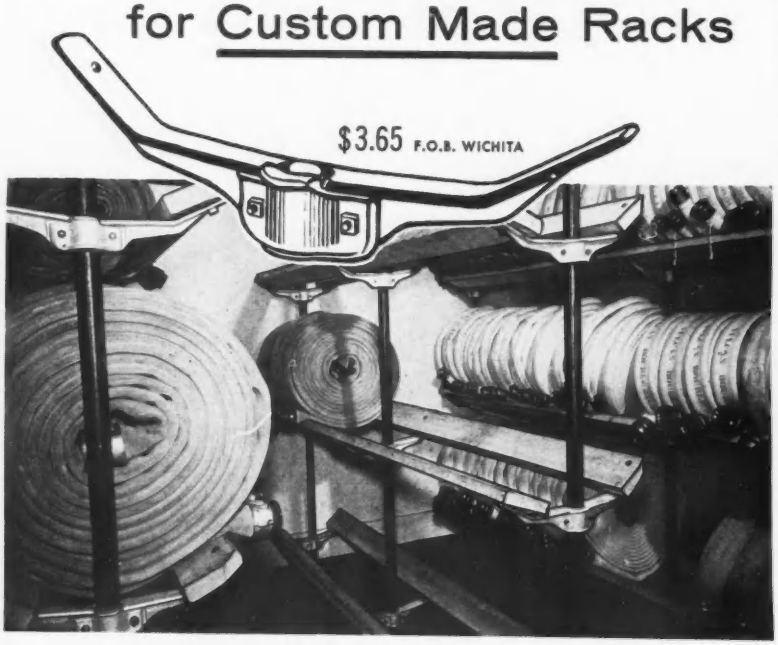
No. 720 — "COMMANDO"
(Flint-Flex Plastic)

Write for Catalog 360 showing everything a fireman needs for his personal equipment — together with Department Record Books, Secretary's Books, and printed forms.

CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.

SINCE 1836

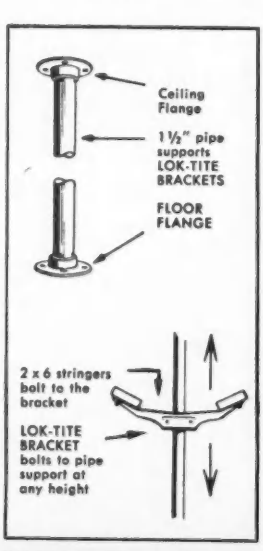
Hose BRACKETS
for Custom Made Racks



$3.65 F.O.B. WICHITA

Convert Waste Space To Valuable Storage!

Lok-Tite fire hose brackets provide storage racks in odd dimension areas where ready-made storage will not fit. Encourage good housekeeping practices . . . assure easy hose inspection and correct ventilation by building sturdy storage with Lok-Tite brackets approved by hose manufacturers and fire departments everywhere.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1½" pipe supports LOK-TITE BRACKETS
FLOOR FLANGE
2 x 6 stringers bolt to the bracket
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STREET_____
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- Simple to install
- Easy to adjust
- Big load support

LP-Gas Tank Trucks and Trailers

(*Continued from page 31*)

8. Tank anchored to prevent shifting.
Be sure there are suitable stops mounted on the truck or trailer or on the container so that the tank will not become dislodged from its mountings by a sudden stop of the truck. Measures should also be taken to prevent back slippage. Suitable hold-down devices must be provided to anchor the tank at one or more places on each side to minimize its being loosened by vibration.

9. The necessary electrical lights installed and in good condition.
The lighting system shall have over current protection, suitable carrying capacity, mechanical strength and protection against physical damage. Headlights should be focused properly and burned-out running lights replaced.

10. Emergency lights and reflectors provided.
Flares, of course, should not be used if there is any gas leakage. Approved gas-proof lighting may be used. Flags should also be available.

11. Transfer hoses properly protected during transit.
Hoses should be reeled or stored in their proper places. The reel should have a protective housing.

12. Hoses in good condition and periodically tested.
Frequent inspection and periodic testing will help you prevent serious accidents.

13. Are necessary excess flow valves provided?
Excess flow valves are required on all connections to the container except the safety relief, liquid level gauge and filling connection. In lieu of an excess flow valve, a quick-closing internal valve with a secondary control consisting of a fusible section may be used. This internal valve is to be kept closed during transit. Its fusible section should have a melting point not over 220 deg. F. As previously mentioned, a combination of both is the best arrangement.

14. Liquid level gauging device in good operating condition.
Can this be checked, as with a fixed level dip tube, so that there is no danger of over-filling?

15. Adequate brakes on truck and trailer.
This is an obvious point but don't overlook it.

16. At least one 15-lb. fire extinguisher provided and properly maintained.

Use a dry chemical or carbon dioxide type.

17. Chock blocks provided and properly used.

These are to be used whenever the vehicle is parked.

18. Truck marking in compliance with applicable state and ICC regulations.

ICC regulations require that any cargo tank hauling compressed gas be marked on each side and at the rear, in letters at least 6 in. high, with the words "COMPRESSED GAS" or "FLAMMABLE COMPRESSED GAS." ICC also requires that the commonly accepted name of the gas be shown in letters 2 in. high. The name of the carrier or owner and the trademark should also appear.

19. Exhaust system in good condition and located away from the fuel system, piping and cargo tank.

Ample clearance must be maintained between the exhaust system and any combustible material. Muffler cut-outs may not be used.

20. Is truck properly licensed?

Check both local regulations and those of any area into which the truck may be sent.

21. Driver training and education.
Four broad headings:

1. Is the driver familiar with ICC Motor Carrier Safety Regulations?

2. Does he know how to operate all of his equipment?

3. Does he make careful inspections of his equipment and report defects? Possible check points: brakes, chains, fire extinguisher, wheel chocks, red flags and emergency lights, fuel and oil, tires, battery, running lights, horn, windshield and wipers, rear-view mirrors, reflectors and condition of tank, piping and appurtenances.

4. Does he know he must not smoke around the truck?

You can get

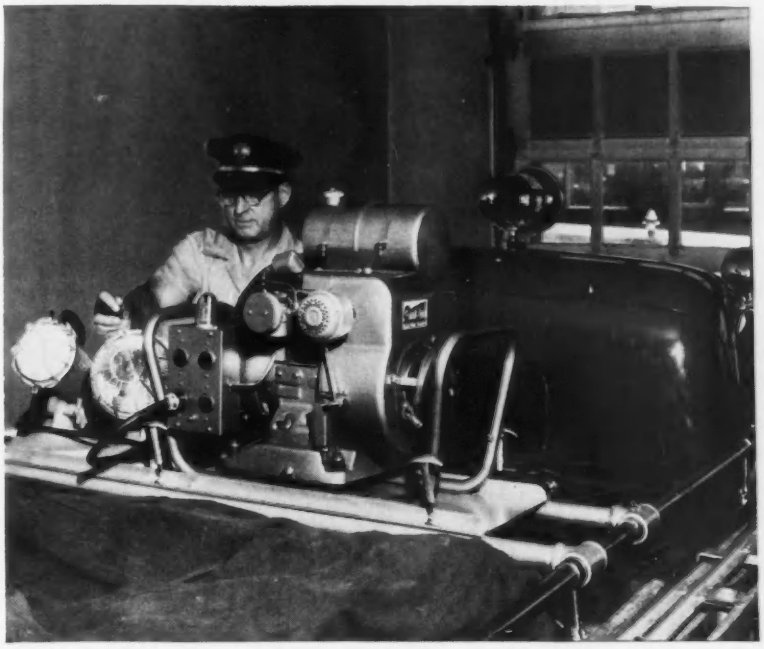
FIREMEN magazine

for all of your fire fighters
through membership in NFPA

Write to:

National Fire Protection Association
60 Batterymarch Street
Boston 10, Massachusetts

Onan NEWS REPORT



Department uses two Onan plants to fight fires, and hurricanes, too!

The 1,500-watt portable Onan plant mounted on the rig above is strictly a fire-fighting tool for the Oxford, North Carolina department. Quickly detachable from the truck mount, it can be carried right up to the fire site to operate floodlights and tools.

The Onan 10,000-watt standby plant below helps fight fires and other disasters. In addition to assuring power for police radio, headquarters lighting, and the air-compressor fire signal system, it also serves the local Civil Defense organization, guaranteeing radio communications when a hurricane or other disaster strikes the community.

10KW PLANT HANDLES ALL ESSENTIAL NEEDS

Radio, air compressor and lights are on the emergency circuit. A flip of the switch starts the plant. Onan also supplies automatic start-stop transfer controls for permanent installations where personnel are not always on duty.

Call the Onan distributor listed in your phone book or write for information

D. W. ONAN & SONS INC.

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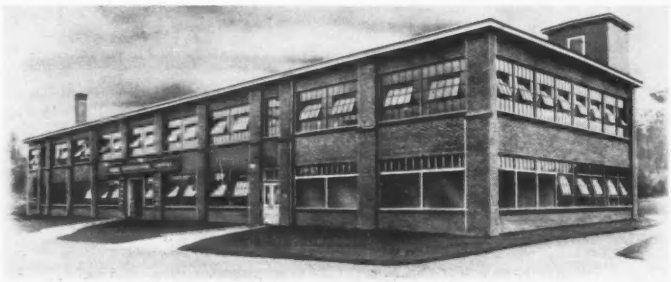
Onan ELECTRIC PLANTS

WHAT GOES INTO A FIREMAN'S SUIT?

Protective clothing needs to be water- and heat-resistant, and durable to stand up in fire combat. Here is how one company manufactures this essential item.

FOR years fire training officers have stressed the importance of wearing protective clothing in responding to every alarm. Well-designed clothing gives essential protection to the fire fighter in shielding him from burns, cuts and bruises in fire combat, as well as offering general protection against the weather. It is particularly important to a man trapped in a hot area or exposed to drops of hot burning chemicals or flammable liquids. Without such clothing the fire fighter is extremely vulnerable to injury or possibly death.



Plant of the Globe Manufacturing Company in Pittsfield, New Hampshire

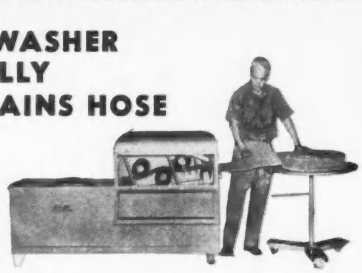
Because this clothing is such a fundamental item, its qualities and benefits are apt to be overlooked. Nevertheless, like other fire department equipment, protective clothing must prove to be reliable, durable and otherwise constructed to meet certain specifications. It must give the wearer good protection against water, heat and abrasion. It must be easy to put on quickly, must fit comfortably and still allow the fire fighter's body to "breathe."

To learn something about how protective clothing is made the editors of FIREMEN magazine queried the Globe Manufacturing Company of Pittsfield, New Hampshire, a concern that has been making fire fighters' clothing for 58 years. At present, this company is represented by some 500 dealers throughout the world who supply a complete line of fire fighters' clothing to municipal, paid, call and volunteer departments and industrial fire brigades. George Freese, president, and his brother Courtland, vice

Better Hose Care-with CIRCUL-AIR
HOSE CONDITIONING EQUIPMENT
WASHERS • DRYERS • TURN-TABLES • STORAGE RACKS

ROTO-JET HOSE WASHER
AUTOMATICALLY
WASHES—RINSES—DRAINS HOSE

ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Hose is self-propelled. Simple one-man operation. With or without detergents, ashes, glass and sludge are automatically scrubbed out and flushed away. Lengthens hose life. Foot-Pedal Operation.



FIRE HOSE DRYER

The patented, electrically operated Circul-Air hose dryer circulates pre-warmed fresh air through loosely coiled hose at the rate of 5 to 6 air changes per minute. No other drying method is so fast — so economical — so easy to use. The preferred dryer in over 5,000 leading Fire Departments.

ACCEPTED — APPROVED
RECOMMENDED

Approved by Underwriters' Laboratories . . . and Canadian Standards Association. Recommended by all leading fire hose manufacturers.

The fast, modern way to handle, store and load hose.

PORTO-RAK
MOBILE
HOSE STORAGE
AND
LOADING UNIT

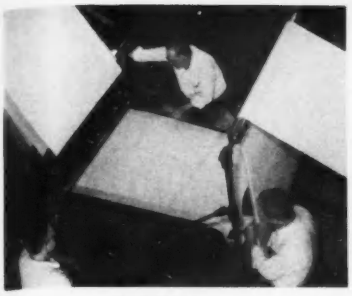
Saves valuable space. Holds 1,800 ft. of 2½" hose — proportionately more of 1½" — in an 8 ft. space (when loading table is detached). Roll it right up to the truck for reloading — out of the way when not in use. Equipped with locking fiber-wheeled casters.

WRITE FOR NEW LITERATURE

If you are planning to build or remodel, send for our brochure "Fire Station Design."

See these units demonstrated at the I.A.F.C. Convention in Grand Rapids

THE CIRCUL-AIR CORPORATION
575 EAST MILWAUKEE
DETROIT 2, MICHIGAN



Shrinking . . .

. . . sewing . . .

. . . cutting . . .

president and treasurer, are grandsons of the founder. In a modern, two-story plant in Pittsfield, the company employs 125 persons, including an office staff of six.

The Globe suit, a coat and pants combination made for fire fighters, actually consists of three separate parts — the outer garment, made of tough snag-resistant duck; the interlining, made of 100 per cent DuPont neoprene; and the liner, made of either lightweight sanforized plaid flannel or 100 per cent wool. Air space is allowed between each layer of fabric for insulation. The company makes three models of the suit:

1. Lightweight — with the duck outer garment, neoprene interlining and lightweight flannel liner.

2. "All-Temp" — with the duck outer garment, neoprene interlining, lightweight flannel liner and a detachable 100 per cent wool liner.

3. Regular — with the duck outer garment, neoprene interlining and 100 per cent wool liner.

Because of varying demand for color, particularly from volunteer fire departments, the suits are

. . . fasteners . . .

Kohler Electric Plant rides with volunteer fire department

Model 1.5M25, *1500 watts, 115 volt AC. Manual start.*

A truck-mounted 1500 watt Kohler electric plant, for floodlights and power tools, helps volunteer firemen of Black River, Wisconsin, control fires with speed and safety.

Rural and city departments use portable Kohler plants for reliable, quick-starting power . . . Larger models maintain alarms, communications, when emergencies cut off highline power. Sizes to 100 KW, gasoline and diesel. Write for illustrated folder D-30.

Visit our exhibit at the
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS' CONVENTION
Grand Rapids, Michigan

KOHLER CO. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

manufactured in black, brown, white, red, blue or olive drab. Recently the company started production on a new type of suit made of aluminized fabric.

All duck cloth in the outer garment is waterproofed, preshrunk and treated with a fire-retardant finish. A compressive shrinking machine combines steam and heat to stretch and shrink the fabric five or six inches per yard with a tolerance of three-fourths of one per cent.

Each suit is custom made to individual specifications and requirements. Cutting of the material is planned so that orders are processed according to size and color.

There are two distinct sewing operations. First, "garment sewers" sew the individual parts, either the duck outer shell, the neoprene interlining, or the flannel or wool lining, depending on which model is being sewed. "Finishers" or seamstresses then sew the three garments together. After the interlining has been sewed it is treated with a special waterproofing compound, making the lining completely waterproof. The interlinings are then air cured on drying racks at specific temperatures.

. . . and finally, the suit.

After the suit is completed, sewing, seams, material and general condition of the suit are inspected. When it is approved, it goes to the hardware department where high speed automatic rivet machines anchor safety snaps and aluminum D-ring fasteners. (Aluminum is used because it is lightweight, rustproof and non-sparking.) All rivets are capped to eliminate ragged or sharp edges.

After hardware and snaps are installed, the entire suit is thoroughly inspected again. Finished suits are checked against original orders, then shipped to the customers.

Fire service members who would like to watch protective clothing being made might like to know that officials of the Globe Manufacturing Company welcome the opportunity to show the plant to fire fighters and fire officers visiting New Hampshire.

Vice President and Treasurer Courtland Freese points out that all seams in neoprene interlining are treated with special waterproofing compound.

only 8¼" HIGH!

NEW

Washington Ambulance COT!!

Now you can get an ambulance cot that is REALLY LOW — only 8¼ inches high — the perfect answer for cars that have less head room, and for overhanging stretchers. The new Washington model 21-L is of special value for heart cases, and other patients who must be kept in a sitting position. Washington's famous top-quality craftsmanship is apparent throughout this new model cot with such features as sturdy, rigid construction . . . highly polished aluminum tubing and castings . . . very lightweight yet strong . . . trigger release side rails . . . adjustable back rest with nine-position squeeze-lock adjustment. It always pays to choose Washington for the newest and best in all emergency room or vehicle requirements.

ADJUSTABLE-BACK EMERGENCY STRETCHER MODEL 9AB

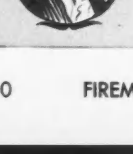
Four adjustable positions on back rest, folds to only 4½ inches high! One of Washington's complete line of folding emergency stretchers for every need, in every price range.

See us at booth 70 I.A.F.C. Convention.

NEW PUSH-TYPE COT FASTENER MODEL 3A

This new and improved cot fastener holds cots securely in station wagons and other types of emergency vehicles. Washington makes four other models of cot fasteners, to meet every need for any kind of vehicle. Tell us the make and model of your vehicle, and we'll recommend suitable fasteners.

See your jobber or write for FREE catalog!



Washington Products Co.

WASHINGTON COURT HOUSE, OHIO

NFPA Film Library Going Strong

by Emmett T. Cox, Chairman
NFPA Committee on Visual Education

THE NFPA Film Library has been operating at a high rate of speed recently. There have been 202 shipments of the 54 films in the library, resulting in 510 showings to 49,875 people. The Library also directed the purchase of 610 films which have been shown to over 69,800 fire fighters.

The Film Library is directed by the NFPA Committee on Visual Education and operated as a service to NFPA by the Western Actuarial Bureau.

The list given below shows the 49 films available from the library as of early spring 1959. All films are 16 mm.

BEFORE THE ALARM. (Fire department operations and training.) 10 minutes. Black and white. Sound.

BEFORE THEY HAPPEN. (Fire prevention.) 25 minutes. Color. Sound.

COMPANY FIRE PREVENTION. (Inspections.) 18 minutes. Black and white. Sound.

CRIMES OF CARELESSNESS. (Unsafe and safe practices.) 11 minutes. Black and white. Sound.

CRUSADERS AGAINST FIRE. (Automatic Sprinklers.) 20 minutes. Color. Sound.

FIRE AND HOW TO FIGHT IT. (Portable extinguishers.) 23 minutes. Color. Sound.

FIRE AND YOUR HOSPITAL. (Hospital fire safety.) 20 minutes. Black and white. Sound.

FIRE AT WHITING. (Actual fire and plant training.) 18 minutes. Color. Sound.

FIRE ON THE FARM. (Fire prevention and water supplies.) 14 minutes. Color. Sound.

FIRE FIGHTERS' WORKSHOP. (Training School.) 20 minutes. Color. Sound.

THE FIRST FIVE MINUTES. (Industrial brigade training.) 27 minutes. Black and white. Sound.

FLAMEFOIL — CANVAS PROTECTION. (Canvas use and protection.) 21 minutes. Color. Sound.

FOG AGAINST FIRE. (Waterfog on rural fires.) 20 minutes. Color. Sound.

GETTING THE MOST OUT OF WATER. (Waterfog vs. fire.) 20 minutes. Color. Sound.

HAPPY FIRE CHIEF. (Christmas fire safety.) 5 minutes. Black and white. Sound.

HEATING SAFELY. (Portable heaters and stoves.) 6 minutes. Black and white. Sound.

HEROINE OF THE WEEK. (Baby sitter and fire.) 6 minutes. Black and white. Sound.

HOW TO CALL THE FIRE DEPARTMENT. (How to turn in alarms.) 5 minutes. Black and white. Sound.

I'M NO FOOL WITH FIRE. (Cartoon for children.) 8 minutes. Color. Sound.

KITCHEN FIRE FIGHTING. (Handling small kitchen fires.) 18 minutes. Black and white. Sound.

KNOW YOUR EXTINGUISHERS. (Extinguishers vs. small fires.) 18 minutes. Color. Sound.

THE MAGNOLIA STORY. (Small town fire prevention.) 20 minutes. Color. Sound.

MASTER SPRAY STREAM PROBLEMS. (Large volume waterfog.) 20 minutes. Color. Sound.

MODERN MAGIC IN FIRE PROTECTION. (Automatic sprinklers.) 28 minutes. Black and white. Sound.

NO TIME TO LOSE. (How to report a fire.) 5 minutes. Black and white. Sound.

NOT TOO HOT TO HANDLE. (Extinguishers vs. fire.) 20 minutes. Color. Sound.

SAFE EXIT. (Panicproof hardware.) 23 minutes. Color. Sound.

STOP FIRES — SAVE JOBS. (Training employees for fire emergencies.) 18 minutes. Black and white. Sound.

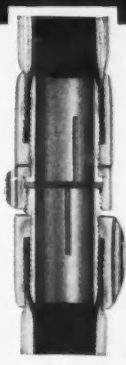
STUPID CARELESSNESS THE FIRE CLOWN. (Children's film.) 5 minutes. Color. Sound.

TEXAS CITY COMES BACK. (Fire insurance industry.) 10 minutes. Black and white. Sound.

THEN IT HAPPENED. (Forest fire in Maine.) 10 minutes. Color. Sound.

THESE ARE THE FACTS. (Insurance companies' inspections, engineering, re-

(Continued on page 65)



(Patented)

1. FULL FLOW—no significant reduction of internal diameter. Pressure is assured.
2. STREAMLINED—round-edged design, no projection.
3. INTERNAL EXPANSION—prevents shrinkage of the hose at the coupling.
4. ACCURATELY MACHINED—always the same . . . interchangeable.
5. REMOUNTABLE—can be removed and re-attached with a key any number of times without cost.
6. WEIGHT—no heavier than comparable expansion type coupling.

Successfully Tested To Bursting Point Of Double Jacket, Single Jacket And Sweat Hose

Recognizing the trend toward higher and higher pressures in fire fighting, Bar-Way has developed a revolutionary coupling that will withstand the pressure and the pull. This new coupling is designed to fire fighting specifications. It guarantees full flow, full pressure, it is streamlined to slip over obstructions, and it can be interchanged anywhere at any time without damage to either the tube or fabric. Specify Bar-Way! Write Bar-Way Mfg. Co., Stamford, Conn.

Available in polished bronze in both standard rocker and forestry lug. 1½" in production. Larger sizes will be available.

BAR-WAY MFG. CO., STAMFORD, CONN.

Firemen and the Home Inspection Program

By Jay W. Stevens, Chairman, Fire Prevention Committee,
International Association of Fire Chiefs

FIRE fighters are on the march all over North America, giving a valuable service to their communities. Accepting the recommendations of the International Association of Fire Chiefs, fire departments are now on the offense against dwelling fires.

While Chief John Alderson of Los Angeles was serving as president of the International Association of Fire Chiefs in 1951, he approved a plan designed to reach, if possible, every one of the 50 million homes in America, by utilizing in-service firemen to make home fire prevention inspections. It is estimated that 20 million inspections will be made this year.

In order to reach as many fire officials as possible, an appeal was made to the United States Governors' Conference. Governor Arthur Langlie of the state of Washington, then chairman of the Conference, personally wrote every governor in the country recommending that he cooperate fully with the chiefs in their endeavor to save as many as possible of the 4,000 children being burned to death annually in homes. Thirty-two of these governors have established state-wide fire prevention conferences to date.

Jay W. Stevens

The plan called for a governor to issue a personal invitation to all fire chiefs, fire marshals, and others in his state directly interested in fire problems, to meet with him in the legislative chambers at the state capitol,

LEARNING IS FASTER WITH MOTION PICTURES

Produced by
THE EXPLORATORY COMMITTEE
OF THE FIRE DEPARTMENT INSTRUCTORS CONFERENCE

- "Helping Sprinklers Help You" $120*
- "Getting the Most Out of Water" $129.50*
- "One Day Fire Fighter Workshop" $109.50
- "Master Spray Stream Problems" $120
- "Fog Against Fire" $120
- "Let's Try Fog" $97.50
- "Salvage" $75
- "Using Water Wisely" $140

(*New)

ALL WITH SOUND AND COLOR

STEVE SMITH PICTURES
623 KANSAS AVENUE, TOPEKA, KANSAS

where the program would be explained by officials who had previous successful experience. The chiefs in turn would explain the plan to their fire departments, after which the firemen would make inspections of dwellings, pointing out hazards and making recommendations to prevent fires.

Three things are necessary if the plan is to be successful. First, public officials must be sold on the merits of the campaign. The public also must be fully informed through every medium of publicity: newspapers, radio, television, service clubs, schools and churches. In some cases a letter of information signed by the fire chief should be distributed to the homeowners by the firemen before the inspections are started.

Second, the firemen must be thoroughly trained so they will be able to point out all hazards and give recommendations for their correction. Third, the inspections must be carefully planned with regard to approach and procedure.

It would be impossible to list the hundreds of successful cities and towns, including the largest, New York City, and all except three of the major cities of the United States. Many volunteer fire departments have done an outstanding job. One of the first and best was Kentville, Nova Scotia, under the direction of Chief Beverly Wade. Its first attempt was not a success, but through study the department has corrected errors and since has had continued success.

Several fire departments have compiled complete manuals covering the home inspection program. Copies of three of these have been sent to us, and I recommend them for study. They were from Chief Leonard J. Leigh, Toronto, Canada; Chief Frank S. Sandeman, Long Beach, California; and Chief James J. Sweeney, Jr., Oakland, California.

Attending the Indiana Governors' Conference in June were (left to right) Mayor Charles H. Boswell of Indianapolis, Indiana; Governor Harold W. Handley; NFPA General Manager Percy Bugbee and NFPA President Henry G. Thomas.

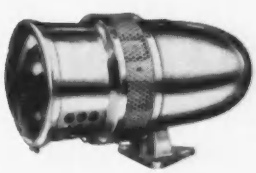
Outstanding records have been made by several cities. In Richmond, California, the number of actual dwelling fires was reduced by 43 per cent. In Tulsa, Oklahoma, Chief G. L. Sartin reports:

(*Continued on page 64*)

SIRENO
WORLD'S LEADING MANUFACTURER

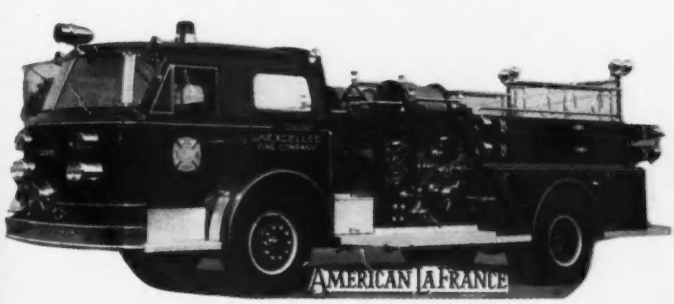
Write for Free Brochure No. 76

No. RJ-1-8 "ROCKET" SIREN

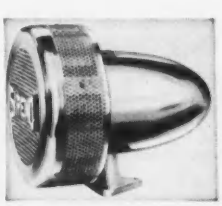


AMERICAN LAFRANCE CORPORATION
has selected the "SIRENO" Model No. RJ-1-8 "ROCKET" siren as standard equipment on their popular new "900" Series. The high performance standards of American LaFrance fire fighting apparatus require the use of highest quality signalling devices . . . "SIRENO" sirens and warning lights.

COMBINATION No. 199 "SKY LIGHTER" REVOLVING LIGHT



No. ED-10 "JET STREAM" SIREN



AMERICAN LAFRANCE CORPORATION "900" SERIES, 1000 G.P.M., CLOSED-CAB MODEL SHOWN ABOVE WITH "SIRENO" SIREN AND WARNING LIGHT

THE SIRENO CO., INC.
214 WILLIAM ST., NEW YORK 38, N. Y.

"From a public relations standpoint nothing could be more important to a fire department. Since the home inspection program was instituted, we have had several of our fire companies recognized by civic clubs. This is the first time the Tulsa Fire Department has been so recognized in its history. The citizens in an area near one of our fire stations recently took up a collection and purchased an MSA 'Pneolator' at a cost of $450 and presented it to this station. Another group is in the process of doing the same thing in its neighborhood."

Hammond, Indiana, has probably made the outstanding record to date, and here is its record:

HAMMOND, INDIANA — POPULATION 108,305
27 SQUARE MILES — 17,470 DWELLINGS

Decrease in residential fires since the start of the "In-Service" home inspection program, June, 1957 through December, 1958:

Dwelling Fires Before Home Inspection 1956		*Dwelling Fires Program Started June 1957* 1957		*Dwelling Fires Year-round Program* 1958	
January	23	January	46	January	6
February	29	February	29	February	6
March	38	March	30	March	16
April	46	April	28	April	5
May	25	May	25	May	5
June	28	June	23	June	2
July	17	July	21	July (Record Low)	1
August	28	August	18	August	5
September	30	September	18	September	4
October	32	October	13	October	4
November	31	November	5	November	8
December	41	December	8	December	4
Total	**368**	**Total**	**264**	**Total**	**66**

Fire Loss, 1956 — $ 82,000
Fire Loss, 1957 — 102,000
Fire Loss, 1958 — 116,000

Total Fire Loss — $300,000

Fire loss of $300,000 is an all time low for three consecutive years. Fire losses have gone up each year due to various factors.

Loss of Life, 1956 — 3
Loss of Life, 1957 — 2
Loss of Life, 1958 — 2

Total number of inspections made	10,571
Not home	3,964
Refused admittance	325
Total calls made	**14,860**

State Fire Marshal Joe Yockers of California reported that in that state during 1957, 32 unattended children were burned to death. In 1958 the loss of unattended children was greatly reduced. Chief Yockers gives much credit to the home inspection program which has been so generally accepted in the state.

Percy Bugbee, general manager of the National Fire Protection Association, is quoted in Paul W. Kearney's book *I Smell Smoke* as follows: "If we had universal home inspections in the United States and Canada, we could reduce dwelling fire losses *50 per cent in one year.*"

A good fire marshal is to a fire department what a quarterback is to a football team.

A fire department without a good, rounded-out inspection program is only 50 per cent efficient.

MAIER-LAVATY UNIFORMS ARE

GUARANTEED

GUARANTEED TO FIT!
GUARANTEED TOP QUALITY!
GUARANTEED DELIVERY!

Maier-Lavaty uniforms are guaranteed hand cut to fit
Guaranteed custom tailored for quality and guaranteed delivery

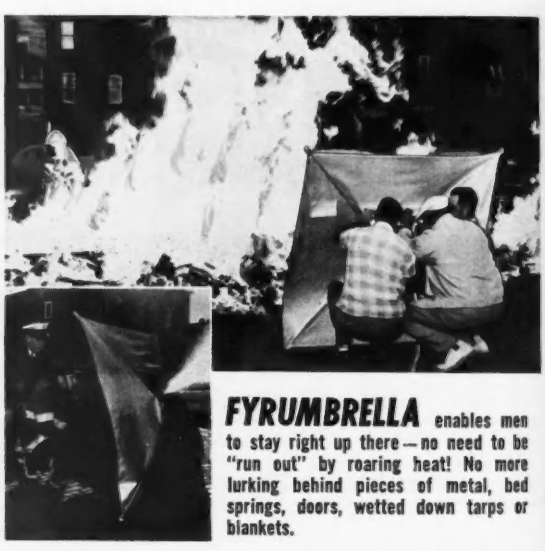
This guarantee is backed by 40 years' serving continuously some of the most particular and large uniform clientele in the United States . . .
Our financial responsibility is equalled by few other uniform manufacturers — by a unique union labor relationship never interrupted by dispute. It is easy to find out about us.
NOW — let us show you a Maier-Lavaty uniform

Maier-Lavaty serves the uniform requirements of Military, Federal, State and Municipal Fire Departments from coast to coast. Measuring service available throughout the country.

Write for complete information.

Maier-Lavaty

315 S. Peoria St., Dept. 119-H, Chicago 7, Illinois



FYRUMBRELLA enables men to stay right up there — no need to be "run out" by roaring heat! No more lurking behind pieces of metal, bed springs, doors, wetted down tarps or blankets.

● Five feet square, when open, the aluminized surface deflects 95% of the radiant heat. The tough **GLASS** cloth construction makes it non-burnable. Three men with 2½" lines and any type nozzles may work through the hose port. Adequate forward vision is provided by eye ports on each side. The **FYRUMBRELLA,** weight only 9½ lbs., folds compactly for easy storage in apparatus compartments. The **FYRUMBRELLA** combines an aluminized reflective surface on strong, non-burnable glass cloth backed by a coating of neoprene for greater strength. Hardware is of a rugged steel construction to withstand raps and bumps. Write for complete information on Fyrumbrella, other Fyrepel Fire Fighting Equipment and Heat Protective Clothing.

FYREPEL PRODUCTS, INC.
Dept. A — Box 503 — Newark, Ohio

NFPA Film Library Going Strong

(*Continued from page 61*)

search.) 18 minutes. Black and white. Sound.

TONY LEARNS ABOUT FIRE. (School fire safety.) 18 minutes. Color. Sound.

TOO YOUNG TO BURN. (Teaching preschoolers About Fire.) 27 minutes. Color. Sound.

THE TORCH. (Cartoon on carelessness.) 10 minutes. Color. Sound.

TRAIN WE MUST. (Training for volunteer fire departments.) 21 minutes. Color. Sound.

UNTIL THE FIRE DEPARTMENT ARRIVES. (What the householder can do.) 5 minutes. Black and white. Sound.

USING WATER WISELY. (Waterfog on small lines.) 23 minutes. Color. Sound.

Since then five additional films have been added and more are coming. Most of the films have been donated. For example, the dramatic film "Fire in Town" was given to the NFPA Film Library by the Dominion Fire Commissioner of Canada, C. A. Thompson. This award-winning film shows the need for fire inspection of dwellings and how inspection can be accomplished in a town. It is available to all fire departments on loan.

The only cost to the fire department is the payment of the return postage and insurance. Additional information and orders for films should be sent to:

NFPA Committee on Visual Education
c/o H. Wolff
P.O. Box 1089
Chicago 90, Illinois

Information on the new films added recently will be given in subsequent issues of this magazine.

FIREMEN!

INCREASE YOUR INCOME!

Convert your spare time into steady income selling most popular line of Belts and Buckles with Fireman's personal initials, first name or nickname with miniature replicas of actual fire equipment beautifully enameled, also lapels, tie clasps, key chains, money clips, and cuff links. Excellent repeat business. We furnish you with FREE complete sales kit. Really nice part-time money producing items.

NO INVESTMENT NECESSARY!

For full particulars, write to

HOOK-FAST SPECIALTIES, INC.

Factory — 16 Eudora St.
P.O. Box 1425F Providence, R. I.

"RESCUE BREATHING"

WRITTEN, DIRECTED & PRODUCED BY LEWIS & MARGUERITE HERMAN

PRODUCTION SUPERVISION BY ROBERT GROSS

A medically endorsed teaching film that dramatically demonstrates mouth-to-mouth rescue breathing; — the new and approved method for reviving victims of drowning, electric shock, gas asphyxiation, choking and suffocation from other causes.

JUDGED . . . Outstanding in clarity, teaching techniques, and interest!

Winner of: Award of Merit — 1959 National Safety Film Contest

Winner of: Blue Ribbon Award — 1959 American Film Festival

Winner of: The Chris Award — 1959 Columbus Film Festival

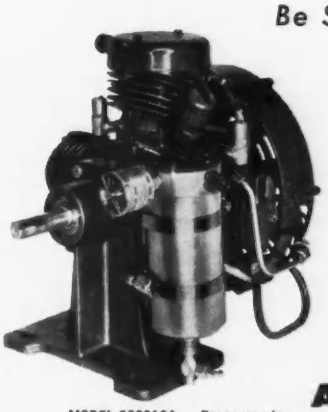
ACCLAIMED . . . The most important safety film ever released!

16mm Color Sound Print $200.00
16mm B&W Sound Print $110.00
25% Discount on 6 or More Prints

Send Orders, or Requests for Preview-for-Purchase, to:

AMERICAN FILM PRODUCERS DEPARTMENT RB-2 1600 BROADWAY, N. Y. 19, N. Y.

At the International Fire Chiefs' Convention, Be Sure to Visit Booth 69 . . .



MODEL 3800104 — Pressures to 3000 psi; 4.0 CFM free air.

Ask about this NEW MONEY-SAVING Cornelius AIR COMPRESSOR

A rugged, inexpensive unit for the safety of your firemen

Seven years of intensive engineering research and development have gone into the new Cornelius high pressure air compressor model 3800104 to provide pure, breathing quality air for departments just such as yours. With this thoroughly reliable, easily portable Cornelius compressor, you can fill air tanks in minutes for drills and emergencies. Yet, your cost is low. You save money because this rugged unit is small, compact, and you don't have to pay for a built-in power source. Simply connect the compressor to one of your present gasoline engines, electric motors or power take-offs. Equipped with ¾" keyed shaft to accommodate V-belt pulley. Convenient pre-drilled mounting holes in bracket base. Ask about this money-saving unit and other Cornelius air compressors at booth 69, I.A.F.C. Convention, August 31 to September 3. For free literature write:

THE Cornelius COMPANY
550 - 39th Ave. N. E. • Minneapolis 21, Minn.

save your voice

with the

Falcon Chief

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speak as you normally would—be clearly heard and understood up to ½-mile away!

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Book on Law Enforcement Photography

A NEW handbook on "Photography in Law Enforcement" has been published by Eastman Kodak Company for use by law enforcement agencies in city, county, state and federal governments. It replaces a volume with the same title published in 1948 and covers a wide area of criminal detection and investigation through photography.

The original text is by Charles E. O'Hara of the New York City Police Department. Information on arson was supplied by John Kennedy, General Arson Investigation, Chicago, Illinois. Photographs from police agencies across the country illustrate the 80-page volume. Chapter titles include:

Identification Photography
Crime-Scene Photography
Specific Crimes
Traffic Accidents
Articles of Evidence
Fingerprint Photography
Document Examination
"On-the-Spot" Photography

The concluding chapters deal with the technical preparation of courtroom exhibits, the role of the police photographer as a witness, the parts played by photography and especially films in police training, crime prevention, and public relations. A final section contains diagrams for two darkroom layouts, one designed for a small police department, the second for a large city.

"Photography in Law Enforcement" is available from Kodak dealers. Its list price is $1.25.

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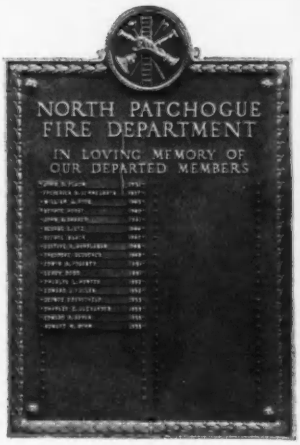

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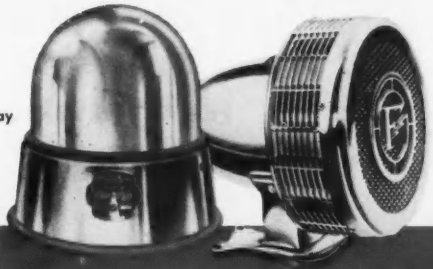

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Makes lights flash on-and-off. Used for flashing warning signals and directional signals. Continues to burn lamps with a steady light in event of failure. Available in 4 types. Will flash one, two, three, four or any combination of lamps up to 6 amperes without matching flasher to load. 6 and 12 volts.

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Dates to Remember

Arkansas: Regional fire schools will be held in Hope, August 17–27; Searcy, August 31–September 10; Marianna, September 14–24; and Harrison, September 28–October 8. Write to Whit Murphy, Registrar, Arkansas State Fire College, State Education Building, Little Rock.

British Columbia: The Fire Chiefs' Annual Fire College will be held in Burnaby, August 19–21. For more details, write to H. K. Jenns, Supervisor, Traveling Instructional Units, Office of the Fire Marshal, 411 Dunsmuir Street, Vancouver 3.

Florida: The Florida State Fire College in Ocala will hold resident training classes September 7–11. Write to W. H. Barnett, Superintendent, Florida State Fire College, Box 785, Ocala.

Idaho: The Annual State Fire School will be held August 13–15 in Boise. Write to Earl Robinson, Secretary-Treasurer, 212 South 16th Street, Boise, for further information.

Indiana: The 26th Annual Indiana State Fire School will be held at Purdue University, September 8–12. Write to Professor Shelby Gallien, Director, Public Safety Institute, Purdue University, Lafayette.

Iowa: A seminar in industrial fire safety will be held at Iowa State College in Ames, September 22–25. For details write to Keith Royer, Supervisor, Firemanship Training, 110 Marston Hall, Iowa State College, Ames.

Maryland: The 26th Annual Short Course for firemen will be held at the University of Maryland, September 1–4. Write to Robert C. Byrus, Director, Fire

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Michigan: The Tenth Annual Michigan Fire Inspectors' Conference is scheduled for September 22–25 at the Michigan State University Kellogg Center in East Lansing. During this time the annual meeting of the Michigan Fire Inspectors' Society will be held. For further details write to Arthur P. Patriarche, Secretary, Michigan Fire Inspectors' Society, 716 Ann Street, East Lansing.

Missouri: The Sixth Annual Jackson County Fire Fighters' Conference will be held at Unity School of Christianity, Jackson County, September 12–13, and will feature a hose contest. for more information, write to William Bush Walden, Administrative Assistant in Charge of Firemanship Training, University of Missouri, Building T-11, Room 101, Columbia.

New Hampshire: A fire school sponsored by the Fire Chiefs' Club of New Hampshire will be held at the Meadowood Fire Department Training Center in Fitzwilliam September 19–20. For details write to Captain Robert Callahan, Fire Department Headquarters, Keene.

New York: The 87th Annual Convention of the Firemen's Association of the State of New York will be held at the Hotel Woodruff, Watertown, August 16–21. For details, write to Secretary Eugene M. Braun, 4025 Main Street, Buffalo 26.

Ontario: The following courses will be given at the 1959 Fire College in Gravenhurst: Administration Course for Senior Officers, August 10–24; and Basic Fire Inspection Practices, August 31–September 4. Write to D. E. Barrett, Director, Ontario Fire College, P.O. Box 830, Gravenhurst.

Pennsylvania: A fire department pump school is scheduled for August 31. Special training courses will be given in ladder, rescue and salvage, August 24 and in advanced fire fighting, September 14. Write to Art Espey, Director, Pennsylvania State Firemen's Training School, Box 631, Lewistown.

Tennessee: The 16th Annual Tennessee State Fire Service School will be held at the Tennessee Fire Training Center in Murfreesboro, August 17–21. Write to Homer S. Elkins, Itinerant Instructor-Coordinator, Tennessee State Fire School, 215 Chestnut Street, Chattanooga 3.

Wisconsin: Regional Advanced Fire Protection Schools will be held in Beaver Dam, August 28–29; Ashland, September 8–9; and Rhinelander, September 10–11. For information write to William E. Clark, Supervisor of Fire Service Training, 14 North Carroll Street, Madison 3.

The Southern Wisconsin-Northern Illinois fire school will be held at Truax Air Force Base, Madison, Wisconsin, September 13. This interesting meeting brings thousands of fire fighters each year and includes a varied and interesting program.

See You at Booth #4 at the I.A.F.C. Convention in Sept.

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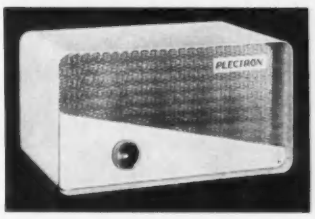

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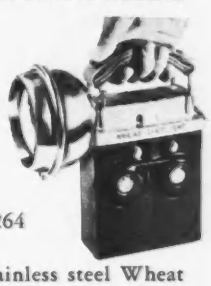

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To All Fire Departments . . .

THIS issue of FIREMEN magazine is being circulated to every fire department in the United States, in addition to the regular 30,000 subscribers. The principal reason for this wide circulation is to give every fire department a chance to read at least a sampling of the type of material published by the National Fire Protection Association.

With this issue we extend a cordial invitation to every fire department to join NFPA. You undoubtedly will find a number of informative and useful articles in this issue, for, like every issue of FIREMEN magazine, it is devoted to the improvement of the fire service. You will find the same sort of valuable information in each issue throughout the year. You can get this magazine, plus the technical journal NFPA *Quarterly* and the monthly *Fire News*, simply by getting an NFPA membership for your fire department. In the middle of this issue is a special page which invites you to join NFPA. Read it — then mail the coupon or send a note to this office. Try NFPA membership for a year — we feel certain that you will renew that membership for many years to come.

Join with the fire departments listed below which NFPA welcomed as members of the Association during the past two months.

Alabama: Chief J. C. James, Eufaula Fire Department, Eufaula; Florence Fire Department, Florence.

California: Bonita-Sunnyside Local Fire District, Bonita; Roseville Fire Department, Roseville; Yuba City Fire Department, Yuba City.

Florida: Jensen Beach Fire Department, Jensen Beach.

Georgia: Lemon's Vinings Fire Department, Smyrna.

Illinois: Belleville Fire Department, Belleville; Belvidere Fire Department, Belvidere; Bethany Fire Protection District, Bethany; Clarendon Heights Fire Department, Clarendon Hills; Crystal Lake Fire Department, Crystal Lake; Havana Rural Fire Department, Inc., Havana; Hazel Crest Fire Department, Hazel Crest; McCook Volunteer Fire Department, McCook; Oak Forest Volunteer Fire Department, Oak Forest; Palos Fire Protection District, Palos Park; Hoffman Estates Fire Protection District No. 1, Roselle.

Mississippi: Oxford Volunteer Fire Department, Oxford.

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New Hampshire: Kensington Volunteer Fire Department, Exeter.

New York: Bedford Hills Fire Department, Inc., Bedford Hills; Centereach Fire Department, Centereach; Fredonia Volunteer Fire Department, Fredonia; Kiantone Independent Fire Department, Inc., Jamestown; Sawkill Volunteer Fire Company, Kingston; Lake Placid Volunteer Fire Department, Lake Placid; North Syracuse Volunteer Fire Department, Inc., North Syracuse; Terrace Hose Company No. 3, Oceanside; Oneida Fire Department, Oneida; Poestenkill Volunteer Fire Company, Inc., Poestenkill; Eagle Mills Volunteer Fire Company, Troy; New Hackensack Fire Department, Wappingers Falls.

North Dakota: Dwight Fire Department, Dwight.

Ohio: Manchester Fire Department, Manchester.

Ontario: Acton Fire Fighters' Association, Acton; Streetsville Fire Department, Streetsville.

Oregon: Salem Fire Department, Salem.

Pennsylvania: Rocky Grove Volunteer Fire Department and Relief Association, Franklin; Oreland Volunteer Fire Company No. 1, Oreland; Penn Volunteer Fire Company No. 7, Pittsburgh; Sharpsville Volunteer Fire Department, Sharpsville.

Texas: Bishop Volunteer Fire Department, Bishop; Crowley Volunteer Fire Department, Crowley.

Virginia: Bristol Fire Department, Bristol.

Washington: Houghton Fire Department, Houghton; King County Fire Protection District 30, Station 2, Kent.

West Virginia: Sistersville Volunteer Fire Department, Sistersville.

Wisconsin: Iron Ridge Fire Department, Iron Ridge.

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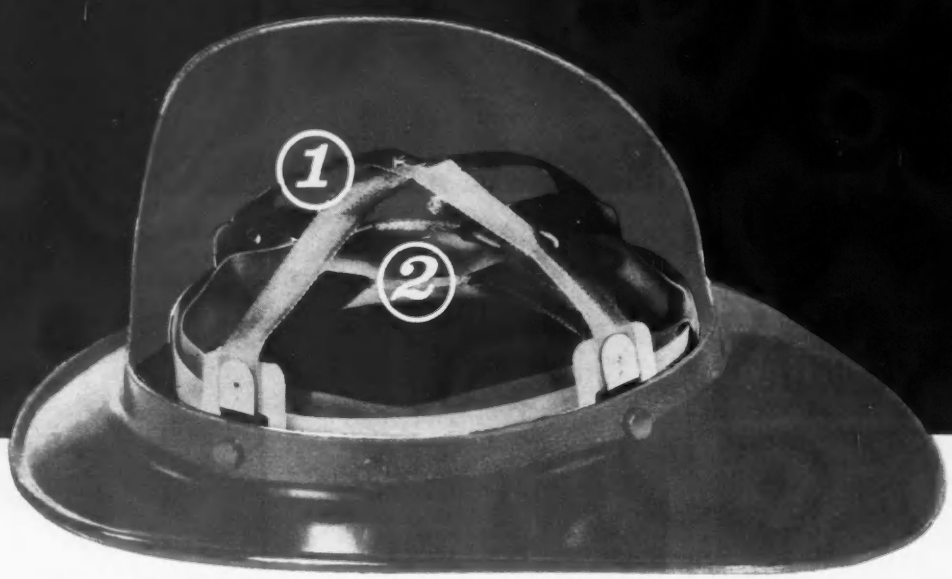
MSA's new "Fixed-Crown" Suspension: soundest head protection advance in fire fighting history (1) permanently fixed upper cradle for safety (2) easily adjustable lower cradle for comfort



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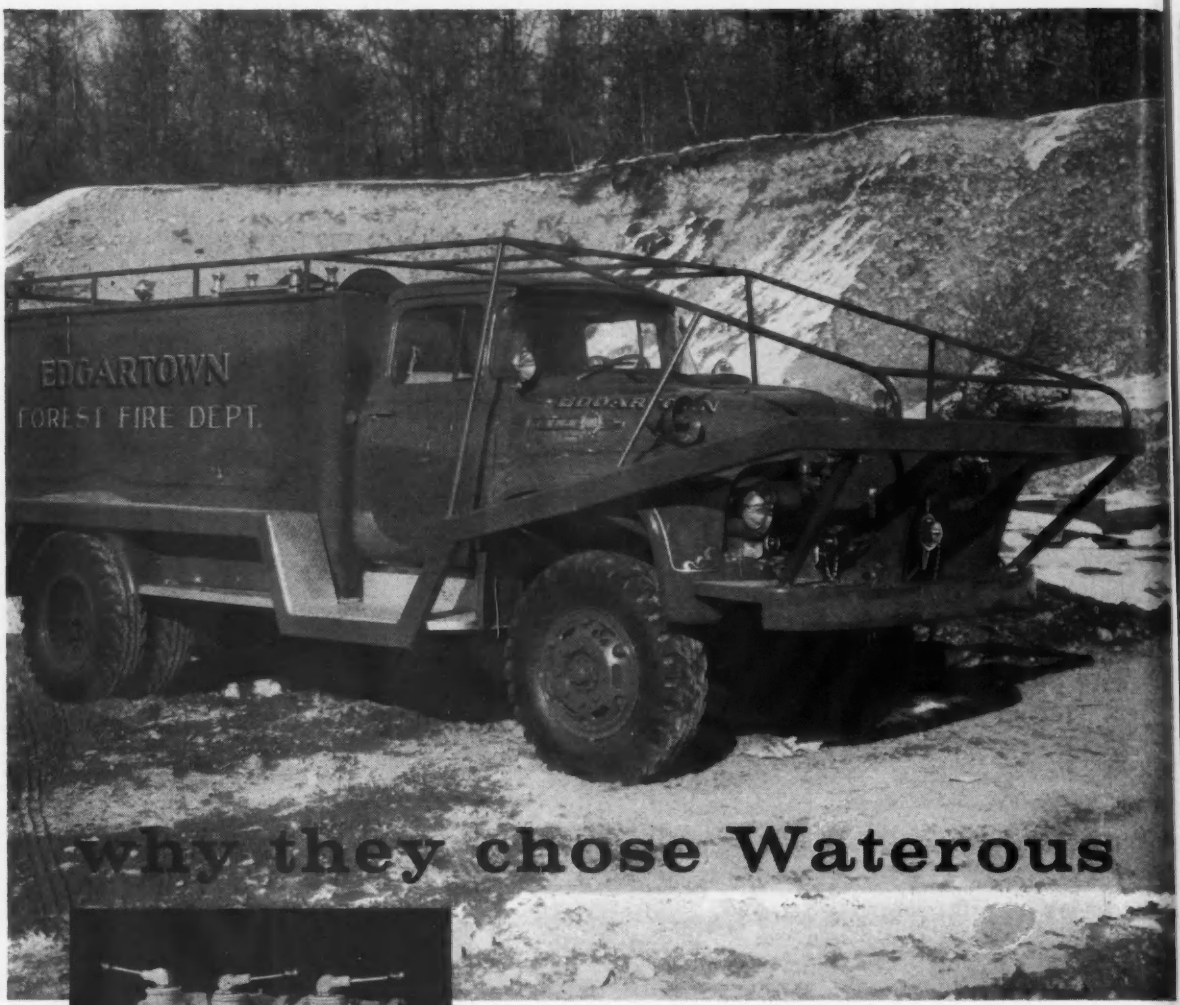

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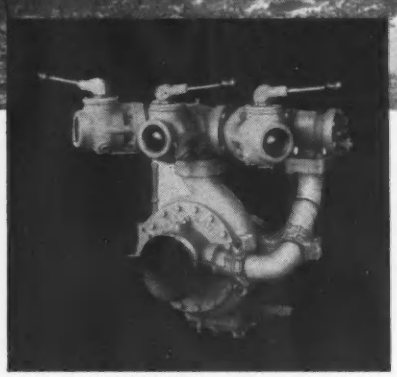

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NEW *Porter*® Hose eliminates drying, resists toughest wear

All-"Dacron" double jacket. There's no need now for costly drying equipment, or for stand-by hose. New all-"Dacron" Porter Deluxe Bonded Hose makes drying operations obsolete, and lasts many times longer under severe dragging and scuffing than other types of double-jacket fire hose.

This new hose, with a rubber bond between the two jackets of DuPont "Dacron" polyester fiber, can be dragged many miles without fraying, and can be left wet on the truck without fear of mildew. No drying, no spare hose needed. And the new Porter all-"Dacron" hose gives more than five times the wear of cotton-jacket hose.

A rubber-bonded double jacket of "Dacron" all around is the secret behind the new mildew-proof Porter Deluxe Bonded Fire Hose.

Get all the facts on this remarkable new money-saving fire hose. Ask your Thermoid distributor, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

THERMOID DIVISION **PORTER** **H.K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY DE MEXICO, S.A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

GOODALL "RED-FLEX"

World's Finest Lightweight

NEOPRENE COVERED FIRE HOSE

Latest Addition to the Modern **"FIRE-FLEX"** *Line*

U. S. PATENT NO. 2392967

"RED-FLEX" *Cuts Your Budget...*
Because "RED-FLEX" *Stays Dry!*

1—MILDEW-PROOFED
2—WATER-PROOFED
3—NO HOSE TOWERS
4—NO MECHANICAL DRYERS
5—NO HUMIDITY MACHINES
6—NO EXCESSIVE SPARES

CHEMICAL, OIL AND GREASE RESISTANT

STANDARD SIZES... 400 LB. TEST

Hose Size	Wgt., 50', Uncoupl'd	50" Coil Diameter
1½"	20 lbs.	19"
2"	29½ lbs.	21"
2½"	37 lbs.	21"

Goodall Rubber Company Date_____
454 Whitehead Rd., Trenton 4, N. J.
Gentlemen:
☐ Send complete information on "RED-FLEX" Fire Hose
☐ Have representative call with details and prices.
Company_____
Address_____
City_____ Zone_____ State_____
Attention of_____

Standard of Quality—Since 1870

HOSE • BELTING • FOOTWEAR • CLOTHING
AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches and Distributors Throughout the United States and in Canada

THE GREATEST NAME IN FIRE APPARATUS

Seagrave PRESENTS

THE MOST COMPLETE LINE OF FIRE APPARATUS IN THE INDUSTRY

CAB FORWARD

IN PUMPERS AND AERIAL LADDERS

Perfect balance, safer construction, easier handling plus Seagrave advanced engineering places the Seagrave Cab-Forward far ahead of other cab-forward designs.

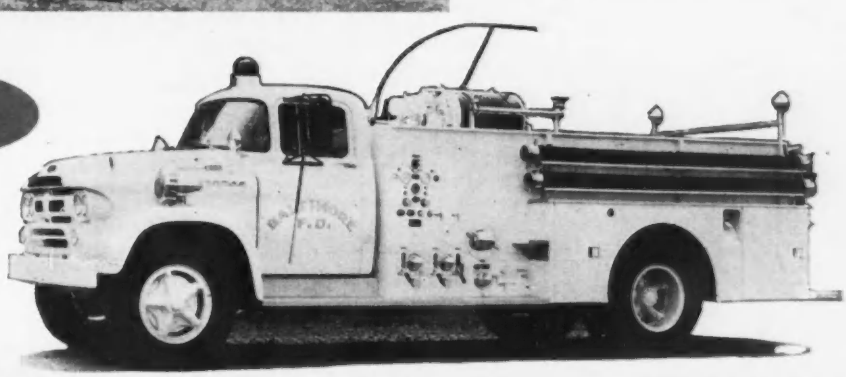
ENGINE--AHEAD-OF-CAB

IN PUMPERS AND AERIAL LADDERS

Seagrave continues the manufacture of the conventional engine-ahead-of-cab models with constantly improved and modernized designs.

COMMERCIAL

IN PUMPERS AND AERIAL LADDERS



THE SEAGRAVE CORPORATION — COLUMBUS 7, OHIO • King-Seagrave Ltd. — Woodstock, Ont.

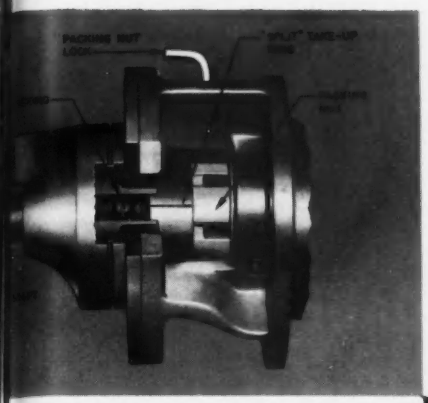
Dependable "in service" performance has made Hannay Reels first choice among firemen everywhere. Complete your apparatus picture with *Hose Reels by* **HANNAY**

BOOTH 73 — I.A.F.C. CONFERENCE, GRAND RAPIDS

CLIFFORD B. HANNAY & SON, INC., WESTERLO, N. Y.

THE INSIDE STORY

Why It PAYS to *Specify* HALE



To form a sound judgment on whether the pump you specify will stand up under long hours of gruelling punishment, you need to know what's inside it—the HIDDEN reasons for enduring quality, efficiency and dependability.

To help you form such a judgment, here is just a part of the "inside story" on a typical Hale Fire Pump.

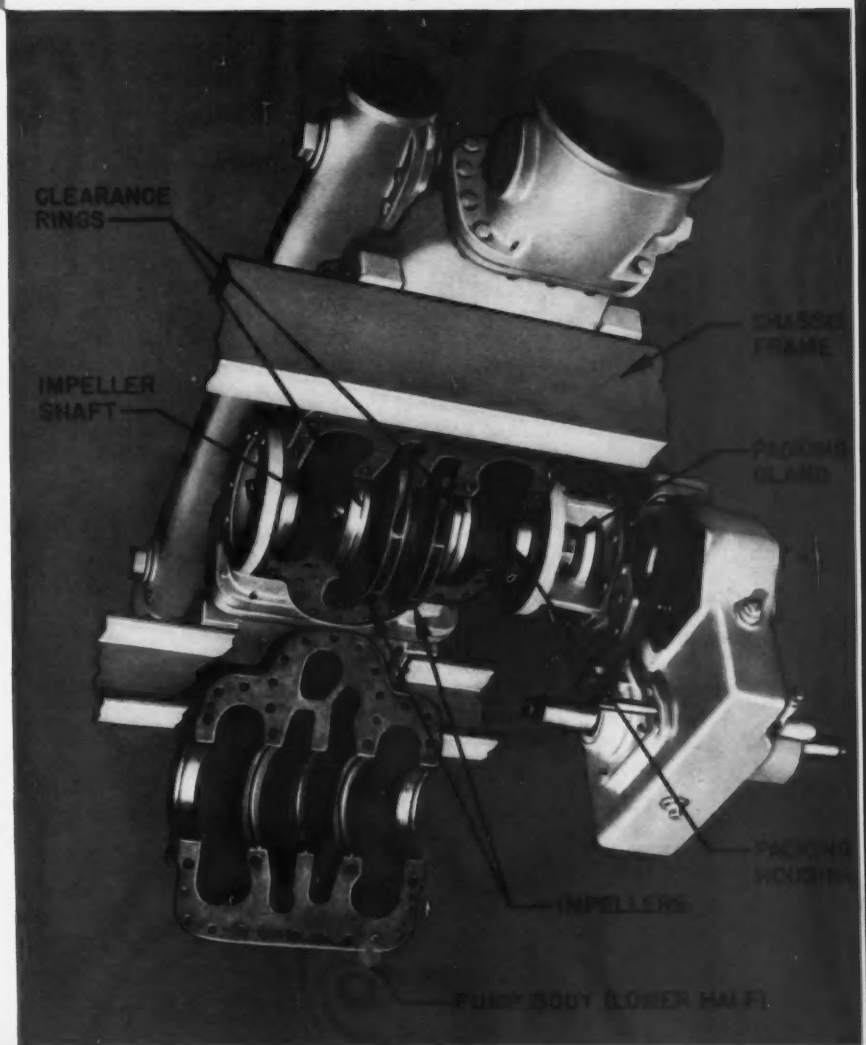
Not only the obviously important parts—such as Impellers, Shafts, Gears, Discharge Valves, Packing—but ALL parts of Hale Fire Pumps are carefully designed, painstakingly tested and subjected to continuous research for possible improvement, SIMPLIFICATION and increased efficiency.

That is why Hale Pumps have won the respect of users all over the world.

HALE PACKING GLAND

Hale Pumps require only one Packing Gland, located on low-pressure (suction) side. CUTAWAY shows why it is so easy to adjust: (a) Requires no special tools. (b) Packing nut automatically locks in place. (c) Design insures even "take-up" of packing—no possibility of cocking. (d) Split take-up ring permits easy replacement of packing rings—which are water sealed and water cooled. (e) Shaft under packing is super-finished to insure longer packing life.

BELOW: Underframe view of Hale 2-Stage centrifugal pump with priming pump removed.



HALE "Inside" PLUS FEATURES

- SIMPLICITY OF DESIGN with Large, Smooth Waterways—Wide Pressure—and—Volume Range.
- High Efficiency for Maximum Performance at both high and low pressures.
- Designed for MODERN High-Powered Engines.
- GEARS—Carefully made by HALE to insure maximum strength and smooth operation; quality product resulting from constant research plus many years of experience.
- IMPELLERS—Cast at HALE; HARD BRONZE for Long Life. Special mixed-flow design for efficiency and superior "filling." Carefully balanced.
- SHAFTS—All shafts are super-finished under oil seals and under packing. Alloy steel heat-treated for extra strength.
- PRIMING PUMP—Rotary Gear Priming Pump—produces high vacuum. Bronze Rotors accurately fitted; carried on large shafts; oil lubricated.

Send for Up-to-date HALE BULLETINS

HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

Hale Fire Pumps are Built in ALL Standard Capacities

OFFICIAL INVESTIGATION SHOWS CHEVRON-4* ANSWERS THE NEED FOR BOTH QUALITY AND THRIFT

Let the impartial laboratory help you make the best buy in police and fire department uniforms this year. An official scientific investigation for a key metropolis (name on request) brought out these facts: Chevron-4,* tested against even premium-priced fabric, rates highest in durability and resistance against shrinkage, fading and tearing.

Chevron-4's unique blend of four top-quality fibers is specially engineered to meet your toughest uniform requirements. Chevron-4* is lightweight, yet warm . . . durable, yet comfortable and pliable . . . parade-dress smart, yet bulldog-tough! What's more, Chevron-4's wash-and-wear convenience means real economy . . . lower cost on the initial purchase . . . minimum cost on upkeep!

In city after city, administrators and fire and police personnel are looking to Chevron-4* fabric to meet and beat the high cost of good uniforms. Find out for yourself how the laboratory rates this wonderful fabric. Write or call today for the Official Investigation File.

FFB CHEVRON-4 UNIFORM FABRIC

*CHEVRON-4 is a Mount Vernon Mills Fabric: Dacron† 47.5%, Orlon† 28.6%, Wool 19.0%, Other Fibers 4.9%. †DuPont Trademark

Mount Vernon Mills, inc.
BALTIMORE 2, MARYLAND

TURNER HALSEY COMPANY
Selling Agents

Main Office and Foreign Division: 40 Worth St., New York
Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

SPECIFY

Powhatan

"SUPER-FORGE"

DROP FORGED BRASS COUPLINGS

★ LIGHTWEIGHT

★ NON-CORROSIVE

★ DURABLE

Plate No. 15-DFS

Three Lug "Sensible Lugs"

on Male and Female with Higbee Indicators

Available in 1½ and 2½ inch sizes

POWHATAN BRASS & IRON WORKS

RANSON, WEST VIRGINIA

In The Same Location Since 1892

TRADE PERFEX MARK

"RANGER"

Fire Fighting Brooms

- Strong Hickory handles. Metal re-inforced at all points of stress.
- Riveted into heavy gauge rustproof metal head.
- Chemically fire proofed solid Rattan fibres. Colored Fire Department red.

Trim 14"
Overall length 58"
Weight 40 lbs. per doz.

Now . . .

ALSO AVAILABLE WITH HEAVY GAUGE METAL HANDLE

Here is the Finest Fire Fighting Broom on the market today.

Developed after many years of trial and research.

Made with carefully blended and chemically flame proofed whole and split rattan which makes this sturdy broom acceptable for all types of fire fighting whether grass or underbrush.

Will meet U. S. forestry, state conservation and city fire department specifications.

The "Ranger" is a dependable, useful and long lasting fire fighting tool.

Your apparatus is not fully equipped without "Ranger" fire brooms.

$36.00 PER DOZEN

F.O.B. DELIVERED

Ask your fire equipment dealer or send order on your official stationary to:

PERFEX
BROOKLYN 8, NEW YORK

710-R

Pat. pending

CHOOSE IMPERIAL

THE RIGHT

BOOSTER NOZZLE

FOR YOUR DEPARTMENT

Now there are **three** Imperial Booster Nozzles! . . . including two new ones especially designed for use with dirty water.

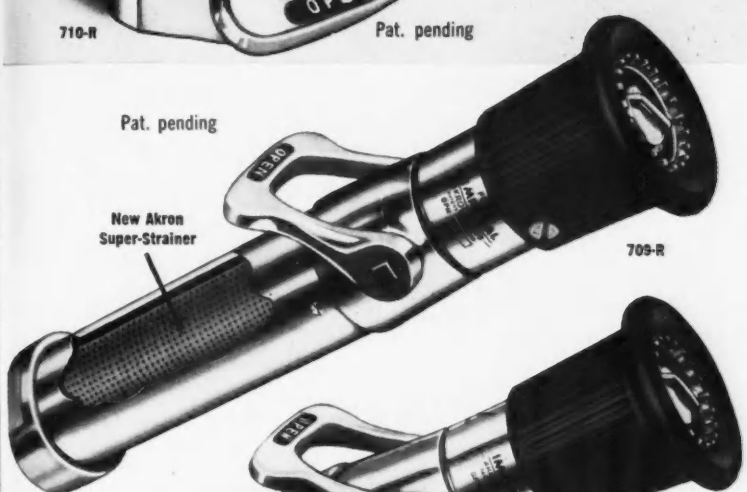
Small and compact, careful Imperial engineering has reduced weight and size without sacrifice of strength or capacity.

Only Imperial gives:

1. **Easy adjustment at highest pressures, works like a charm at pressures to 600 lbs.**
2. **Constant GPM, rated gallonage at all settings.**
3. **Water lubricated.**

Pat. pending

New Akron Super-Strainer



709-R

PS-708

Pat. pending

M-30 BRACKET

IF YOUR WATER CONTAINS SCALE, RUST, SAND OR GRAVEL

Model 709-R

Imperial Nozzle with Super-Strainer

The Imperial Booster, PLUS new Super-Strainer with 700% more strainer area. Strainer easily removed for cleaning. Rigid base.

Model PS-708

Pistol Grip Imperial with Super-Strainer

Imperial with Super-Strainer PLUS swivel base for easy storage. Controlled shut-off reduces water "hammer," won't blow couplings or burst hose.

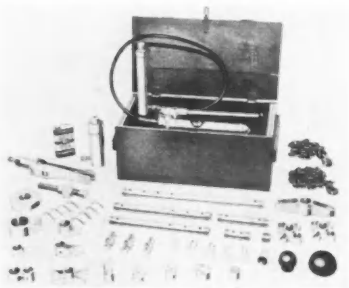
Style	Size	GPM	LIST PRICE	
			PB	CP
710-R	1"	23	77.65	82.05
709-R	1"	23	77.65	82.05
PS-708	1"	23	Not Available	90.00
M-30	MOUNTING BRACKET (Polished Aluminum)			4.50

Akron Brass Mfg. Co., Inc.
Wooster, Ohio

Akron Mfg. (Canada) Ltd.
Aylmer, Ontario

AKRON BRASS
FIRE FIGHTING EQUIPMENT

For Your Attention . . .



Rescue Equipment Kit

A new line of hydraulic rescue equipment, "Porto-Power," (left) converts pounds of manual effort into tons of power for fast extrication of victims trapped in fires and accidents. Kits come in 4-, 10- and 10–20-ton capacities. Write to *Mine Safety Appliances Company*, 201 North Braddock Avenue, Pittsburgh 8, Pennsylvania.

New "Handie Talkie" with Private Line Switch

The new portable "Handie Talkie" (right) two-way radio unit now has a private line off-on switch to eliminate any local and long range interference in both the 25–50 mc and 144–174 mc frequency bands. For complete information, write to *Motorola Communications and Electronics, Inc.*, 4501 West Augusta Boulevard, Chicago 51, Illinois.

FOL-DA-TANK DOUBLES THE USE **OF YOUR TANKER!**

Acclaimed by Fire Departments Everywhere As The Answer to Adequate Water Supply!

Unloaded from fire truck or tanker and set up in less than 1 minute.

Two men easily open Fol-Da-Tank. Tanker or Mutual Aid trucks fill tank.

While pumper drafts from Fol-Da-Tank, tanker is free to bring additional water.

Fire out, Fol-Da-Tank emptied in 30 seconds. Ready to reload.

You, too, can save the cost of an extra tanker and still give the protection of 2 tankers! In rural areas where the nearest water supply is often miles from the fire the Fol-Da-Tank often makes the difference between extinguishing the fire and the loss of thousands of dollars in property damage.

600 and 1000 GAL. TANKS Heavy duty construction

Contact Your Distributor or WRITE:
FOL-DA-TANK COMPANY
Box 361, Rock Island, Illinois

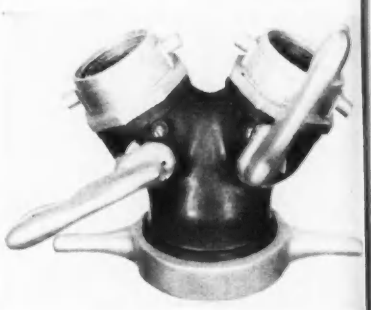
IMPORTANT CONSIDERATIONS in GAS MASK SELECTION

ACME GAS MASKS

SAFE MASK DESIGN
COSTS INCLUDING MAINTENANCE
ACCEPTANCE BY EMPLOYEES
FIT — FATIGUE REDUCTION — VISION

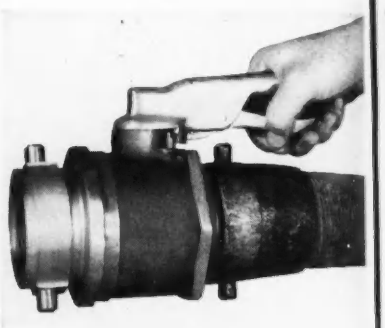
A new Brochure with down to earth information on Mask Selection is ready. Write for your free copy.

Acme Protection Equipment Co.
1279 KALAMAZOO ST. SOUTH HAVEN, MICH.



Twin Siamese Hydrant Gate

Catalog No. 61, twin Siamese Hydrant Gate by *F. N. McIntire Brass Works*, Cambridge 39, Massachusetts, now features *non-sticking*, quarter turn ball valves. Opening and shutoff handles permit easy turning.



Hydrant Gate Features Raised Lock Handle

Catalog No. 163, 2½-in. Hydrant Gate by *F. N. McIntire Brass Works*, Cambridge 39, Massachusetts, with full waterway, quarter turn ball valve, features elevated ratchet lock handle to eliminate hand contact.

●

Before your plant shuts down for summer vacation period, get free "Summer Plant Improvements Program" bulletin from *Protectoseal Company*, 1920 South Western Avenue, Chicago 8, Illinois. . . . Firebrake, the sodium calcium borate forest fire retardant chemical made by *United States Borax and Chemical Corporation*, 630 Shatto Place, Los Angeles 5, California, is now available at less cost and in improved form. . . . A new, portable 35-pound "on the line" unit for making wet water is now marketed by *Deemor Corporation*, 1 Depot Plaza, Mamaroneck, New York. Unit No. 200-P has space for one "Fire-Lik" cartridge to produce 1,000 gallons of wet water and can be attached to pumper, hydrant or carried into a building and attached to any ¾-in., 1-in. or 1½-in. water outlet.

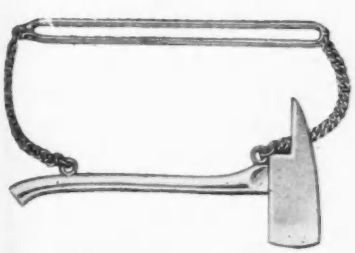
. . . For the Ladies

Charm Bracelet with Six Fire Emblems

"Unique" best describes this lovely charm bracelet with six fire service illustrations embedded in two-tone black-and-white lucite. Designs include fireman's scramble, ax, helmet, fire engine, alarm box and hydrant. Retail price including tax is $3.25. Your group can make money selling this unusual, quality bracelet. Write to *Hook-Fast Specialties, Inc.*, Box 1425F, Providence, Rhode Island.

Handy First-Aid Kit for Vacation Travel

Made of weatherproofed green vinyl on the outside and clear plastic pockets on the inside, this practical First-Aid Travel Kit, size 5- by 8-in., will fit your glove compartment or jacket pocket. Enough first-aid units, each packed for freshness in polyethylene, are included for six to ten people. Write to *E. D. Bullard Company*, 2680 Bridgeway, Sausalito, California.



Fire Fighters Wear Them —Ladies Buy Them!

In dress or street clothes your fireman will look extra neat with this fire fighter's ax tie chain in rhodium or gold plate with shiny red enamel ax head. Lettering on handle is extra. Write to *V. H. Blackinton and Company, Inc.*, Attleboro Falls, Massachusetts.

NFPA Sponsors "Sparky," the Fire Dog Doll

Lovable and durable, "Sparky," the fire dog doll, in red, white and blue uniform and fire hat, brings fire prevention to children everywhere. You can't find a better prize or gift for Fire Prevention Week campaigns! Price is $5.95 plus 60 cents for shipping (double shipping charge for Canada). Order "Sparky" doll and free list of other "Sparky" items from *Roberts Company*, Box 86D, Wayland, Massachusetts.

"Fireman" Ash Tray with Your Imprint

The Automatic Fireman metal ash tray is only 4-in. in diameter and comes in brilliant fire red and gold enamel. A tapered hole in the fire helmet safely snuffs out your cigarette. Your message can now be imprinted (up to four lines) on new tab. Price is 75 cents, with imprints, in lots of 144. Write to *Keene Advertising Specialties*, 22 Church Street, Boston 16, Massachusetts.

Antique Leather Bucket Becomes DeLuxe Ice Cooler

An outstanding gift or prize for fire fighters is this delightful replica of the 17th and 18th century fire buckets, finished in either black or red high gloss leather. A gold anodyzed spun aluminum inner shell has capacity of four full trays of ice cubes. Actual size is 8-in. in diameter and 13-in. deep, plus handle. Special price to the fire service from *Cairns & Brother, Inc.*, Allwood, Clifton, New Jersey.

Bright Colored 11½-oz. Tumblers for Gifts, Awards or Anniversaries

Here is a top grade 11½-oz. tumbler that can be imprinted for special awards, gifts, anniversaries, or fund raising campaigns. A bright color imprint like "For a Full Measure of Protection, Call (your department phone number)" would be effective on a tumbler with a graduated scale. Price is about 16 cents each in lots of 288, plus a $7.50 art charge on the original order. Tumbler with graduated scale is 18 cents. Write to *Keene Advertising Specialties*, 22 Church Street, Boston 16, Massachusetts.

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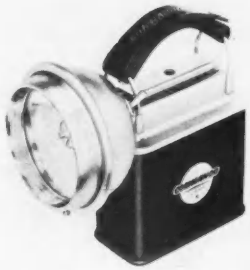

Powerful "Commando" Hand Lamp

A new stainless steel, dry-cell battery operated hand lamp, the "Commando," is now marketed by *Koehler Company*. Model 281-GB is said to be the most powerful dry-cell safety spotlight today — listed and approved by U. S. Bureau of Mines and U. S. Coast Guard for Class 1, Group D. The "Commando" throws a 1,500-ft. beam of 15,000 candlepower from a six-volt double pack battery and has adjustable focus for spot or diffused light. Write to *Koehler Manufacturing Company*, Marlboro, Massachusetts.

●

Production of the "Sentinel," "Volunteer" and "Ambulandau," well known ambulance models, is currently being expanded by *Miller-Meteor Motor Car Division, Divco-Wayne Corporation*, Bellefontaine, Ohio. One hundred thousand square feet of new manufacturing facilities have been added. . . . You can have your favorite fire or police emblem set in a tie clasp, tie chain, belt buckle, key chain, money clip, cuff links and earrings Write to *Hook-Fast Specialties, Inc.*, P. O. Box 1425F, Providence, Rhode Island. . . . John W. Miller, former chief of the Lyons, Kansas, Fire Department, has accepted the position of sales manager for *Plectron Corporation*, Overton, Nebraska, radio tone alerting systems manufacturer.

●

Akron's "Gismo" Is Handy Shut-Off

Why didn't someone think of this shut-off years ago? This simple little "Gismo" makes any nozzle a break-apart — can be inserted just below the nozzle or anywhere in the hose line. To add more hose to your line, shut off with "Gismo," take off your nozzle, add more line and start up again. Write to *Akron Brass Manufacturing Company, Inc.*, Wooster, Ohio.

BUYING NEW EQUIPMENT?

Consider the products advertised in this issue.

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30 Years Ago... Guided Missiles Were Unknown–But

INDIAN FIRE PUMPS Were in Operation...

As "Sputnik" is the first earth satellite — so **INDIAN FIRE PUMPS** were perfected and in service as early as 1925!

No. 90 INDIAN
Sliding Pump Type

Used His INDIANS 9 Times in 10 Days!

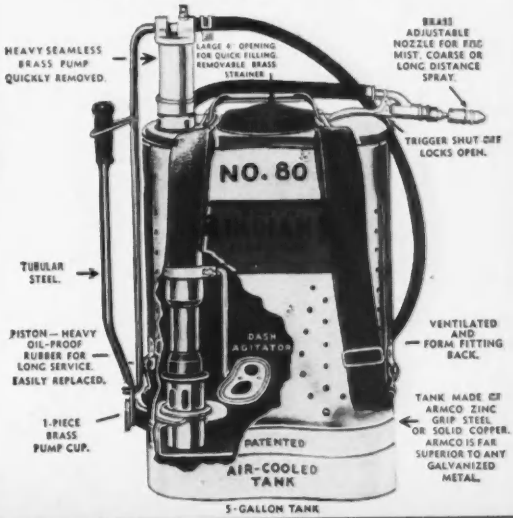
"We have 12 **INDIANS** on our fire trucks and they are the only thing to fight grass and brush fires. Nothing else will match them. We have used our **INDIANS** 9 times in the last 10 days."

S. W. Griswald, Chief
Westbrook, Conn., Fire Dept.

Put your confidence in **INDIAN FIRE PUMPS.** All seams electric welded — no leakage. Pump hurls 30 ft. pressure stream or nozzle adjusts for spray. Extra strong construction. Many **INDIANS** over 20 years old are still in service.

Both Types Approved by Underwriters' Laboratories, Inc.

No. 80 INDIAN
Lever Type Pump and Handle


HEAVY SEAMLESS BRASS PUMP QUICKLY REMOVED.
LARGE 6" OPENING FOR QUICK FILLING REMOVABLE BRASS STRAINER
BRASS ADJUSTABLE NOZZLE FOR FOG MIST, COARSE OR LONG DISTANCE SPRAY.
TRIGGER SHUT OFF LOCKS OPEN.
NO. 80
INDIAN
TUBULAR STEEL.
PISTON — HEAVY OIL-PROOF RUBBER FOR LONG SERVICE. EASILY REPLACED.
DASH AGITATOR
VENTILATED AND FORM FITTING BACK.
TANK MADE OF ARMCO ZINC GRIP STEEL OR SOLID COPPER. ARMCO IS FAR SUPERIOR TO ANY GALVANIZED METAL.
1-PIECE BRASS PUMP CUP.
PATENTED
AIR-COOLED TANK
5-GALLON TANK

SEND FOR NEW CATALOG

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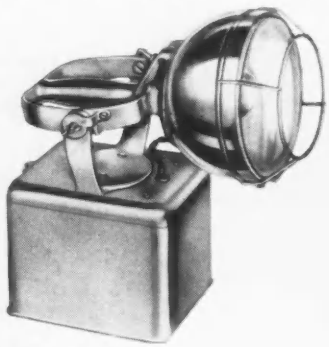

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DESIGNED FOR MODERATE TO FREQUENT USAGE . . .

CARPENTER-LIGHTS with heavy-duty rechargeable batteries are ideal units for frequent-use applications. Savings over dry battery replacements pay off the initial cost differential after 50-75 hours of use. Corrosion-proof terminals plus efficient spring contacts allow insertion of spare batteries in only 10 seconds! . . . another Carpenter exclusive. Batteries are essentially nonspillable . . . may be placed in any practical position.

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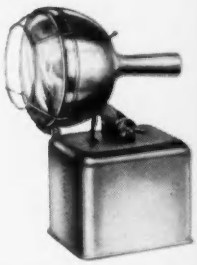
WS-6 . . . **$54.00**
Super-6 . . . **$45.00**
Running board holder . . . **$4.00**
Smoke-fog penetrating lens – **extra $1.00**

Type WS-6 *(Illus. above left)* The ideal light for chiefs and officers. Especially valuable for rescue work . . . where seconds count, it is on the job before mounted searchlights can be positioned. Operates as powerful searchlight or worklight. One battery charge gives 24 hours continuous service as worklight or 6 to 8 hours as searchlight . . . much longer if used intermittently. Only 12 lbs. including battery! Convenient finger-tip, self-balancing handle and beautiful duro-satin finish. Available with running board holder and smoke-fog penetrating lens as optional extras. **Type Super-6** *(Illus. right)* is the same fine basic unit except with rugged one-piece handle and housing.



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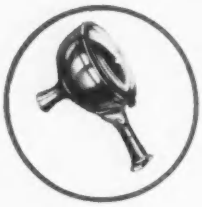

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